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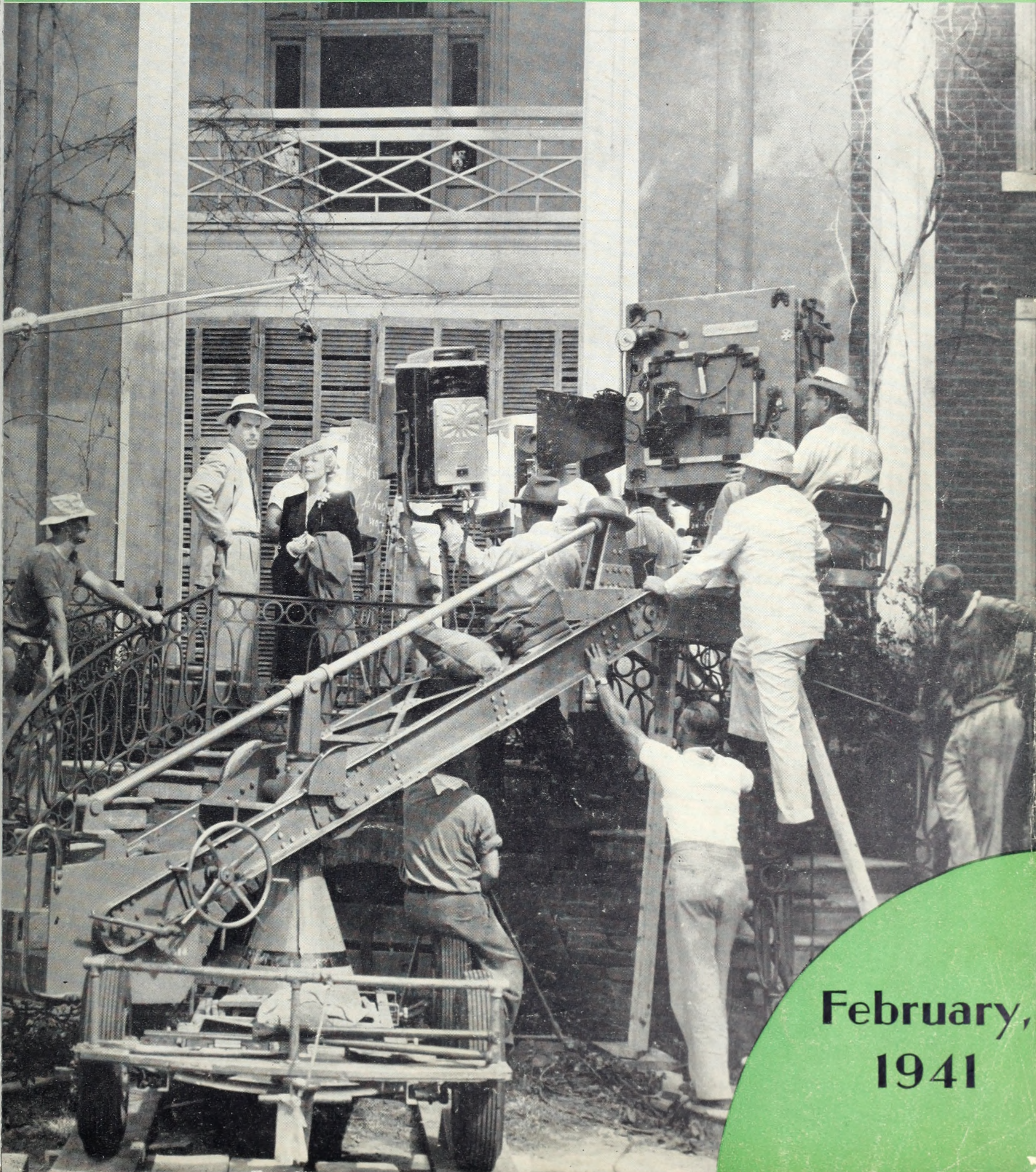

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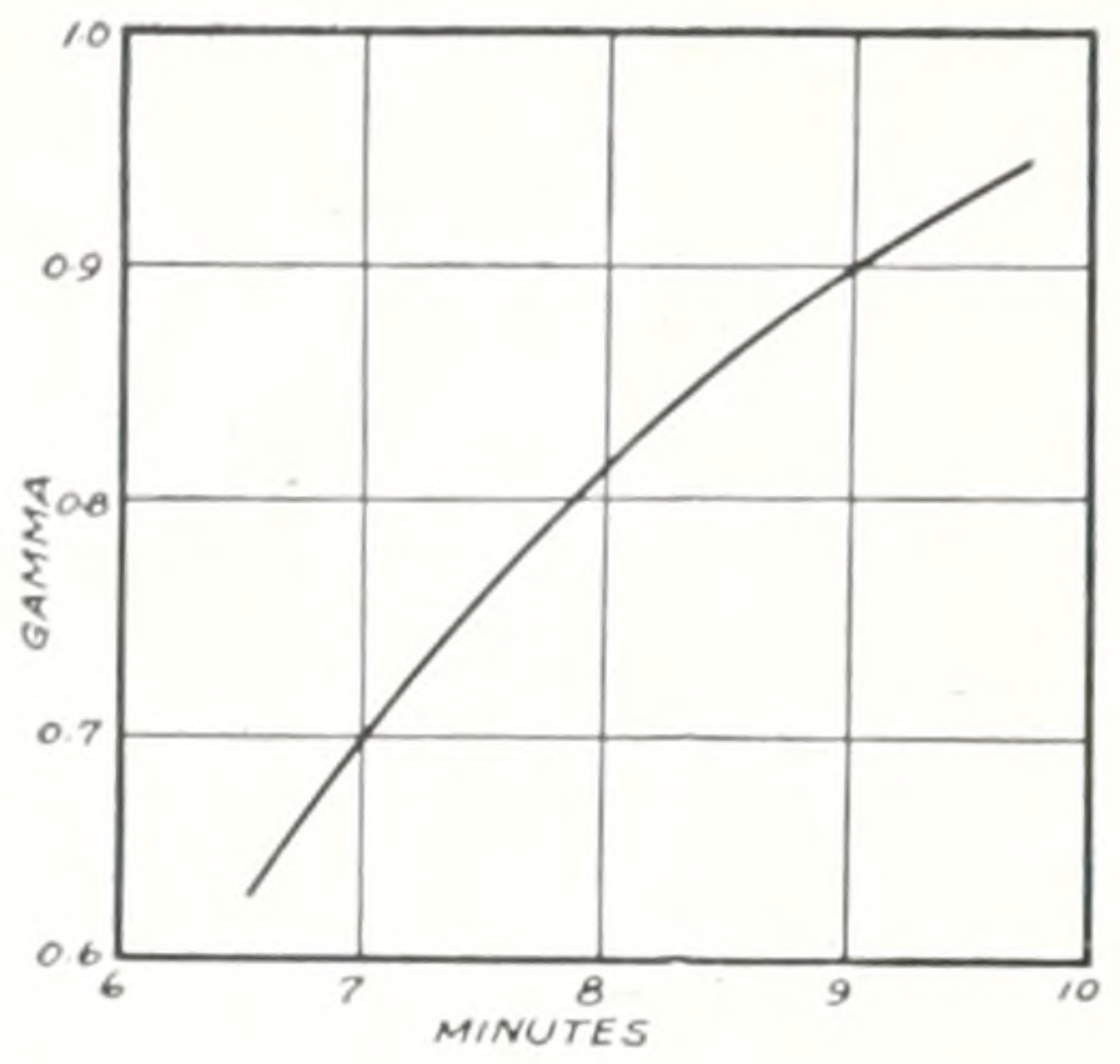

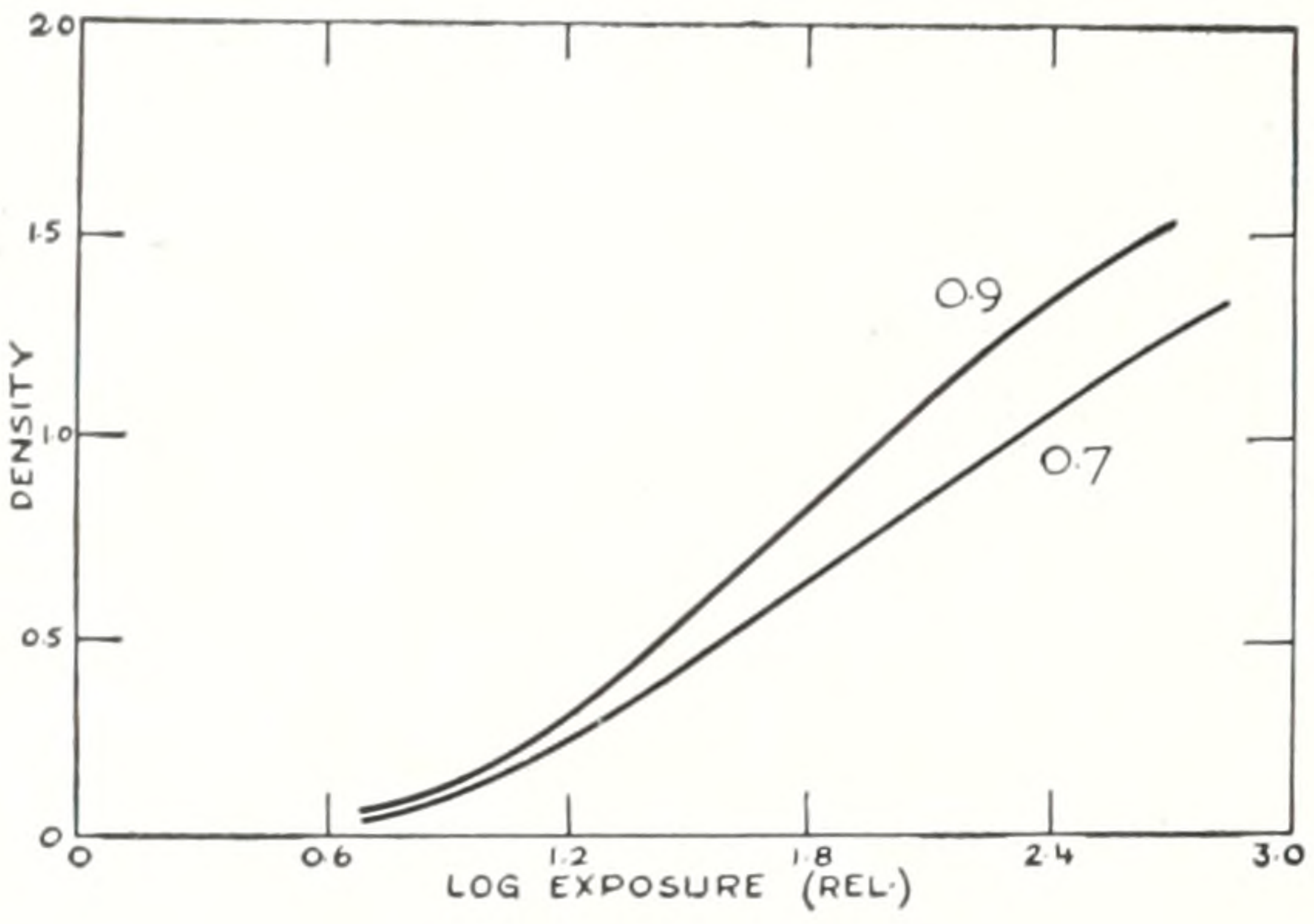

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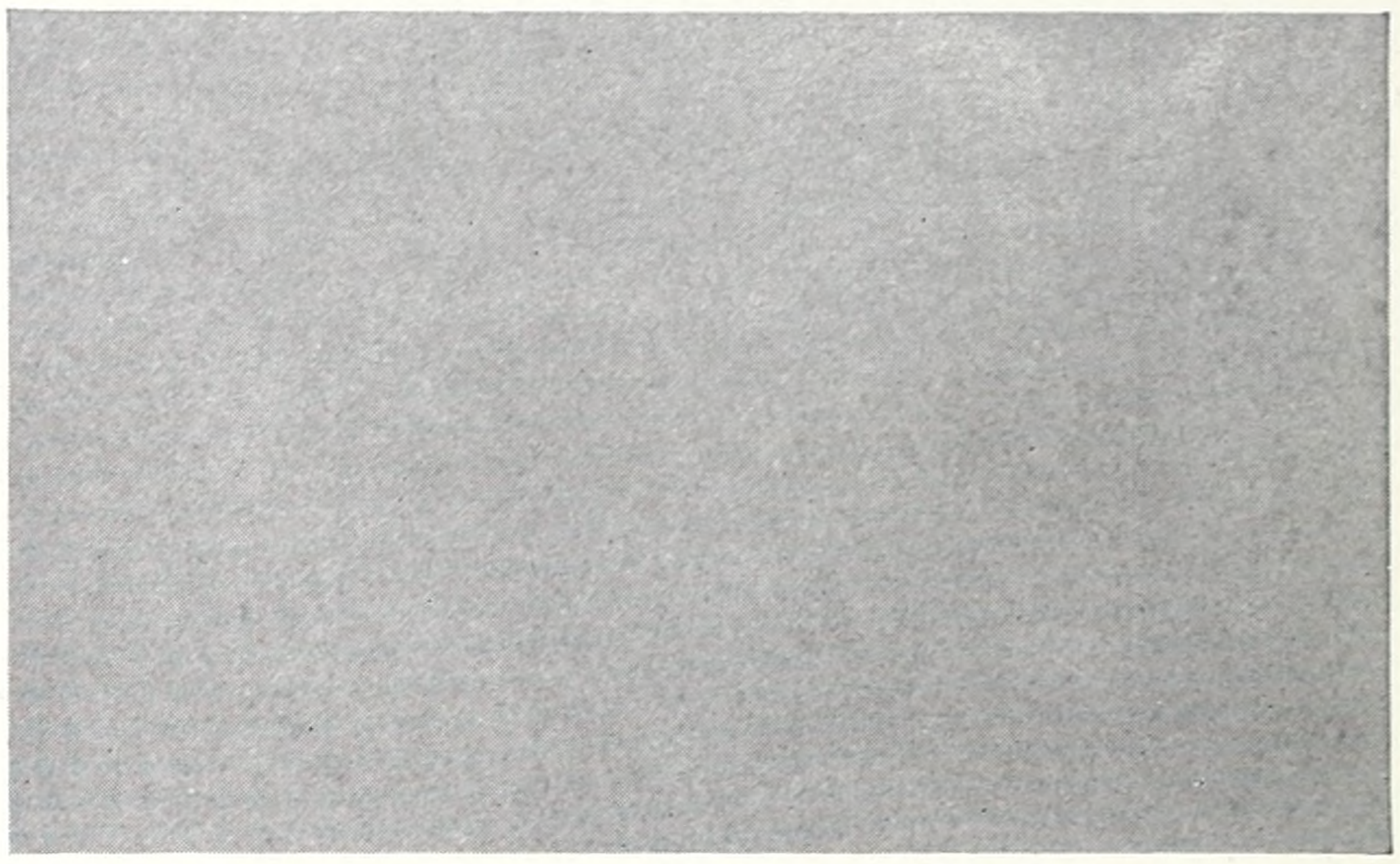

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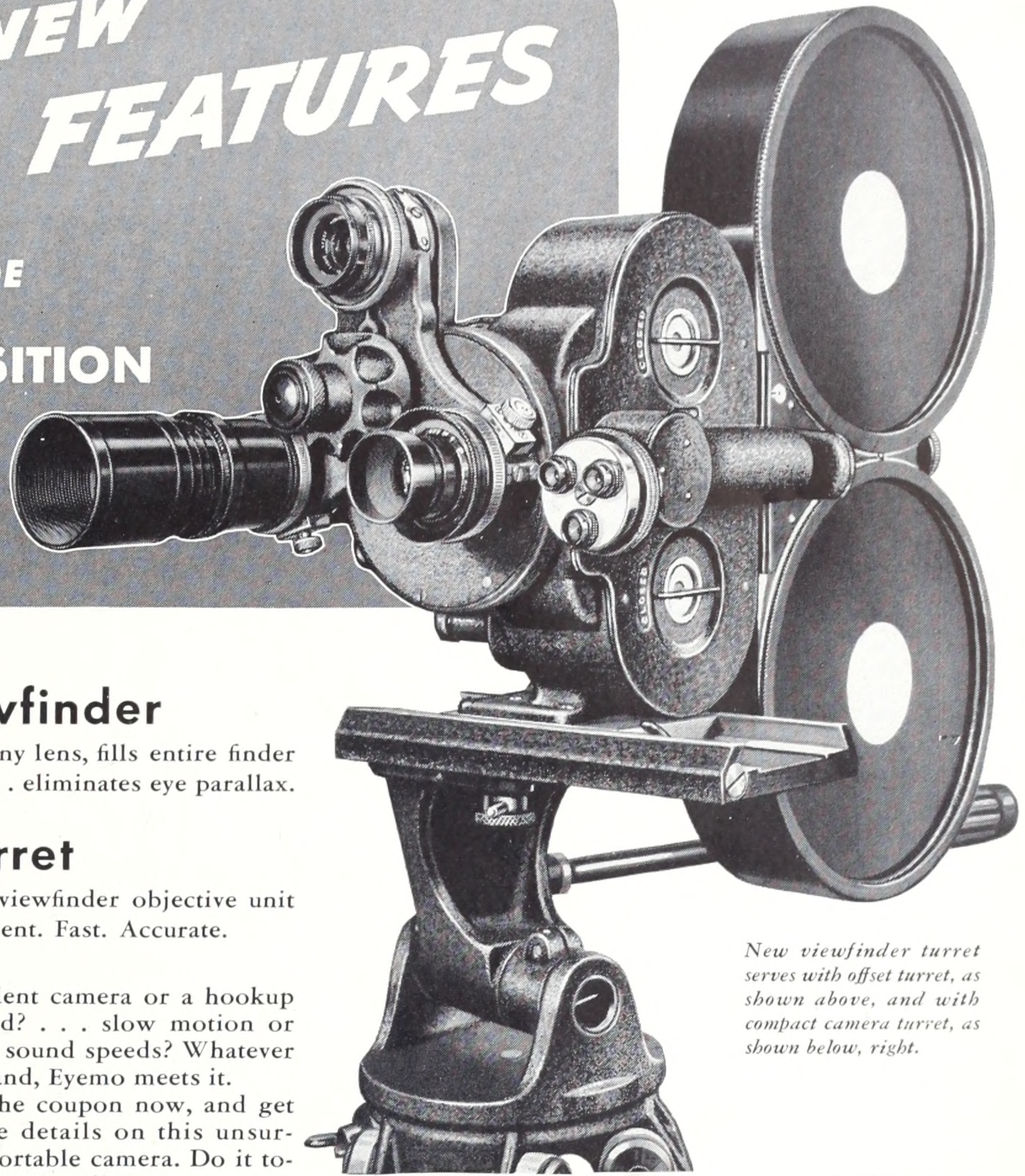

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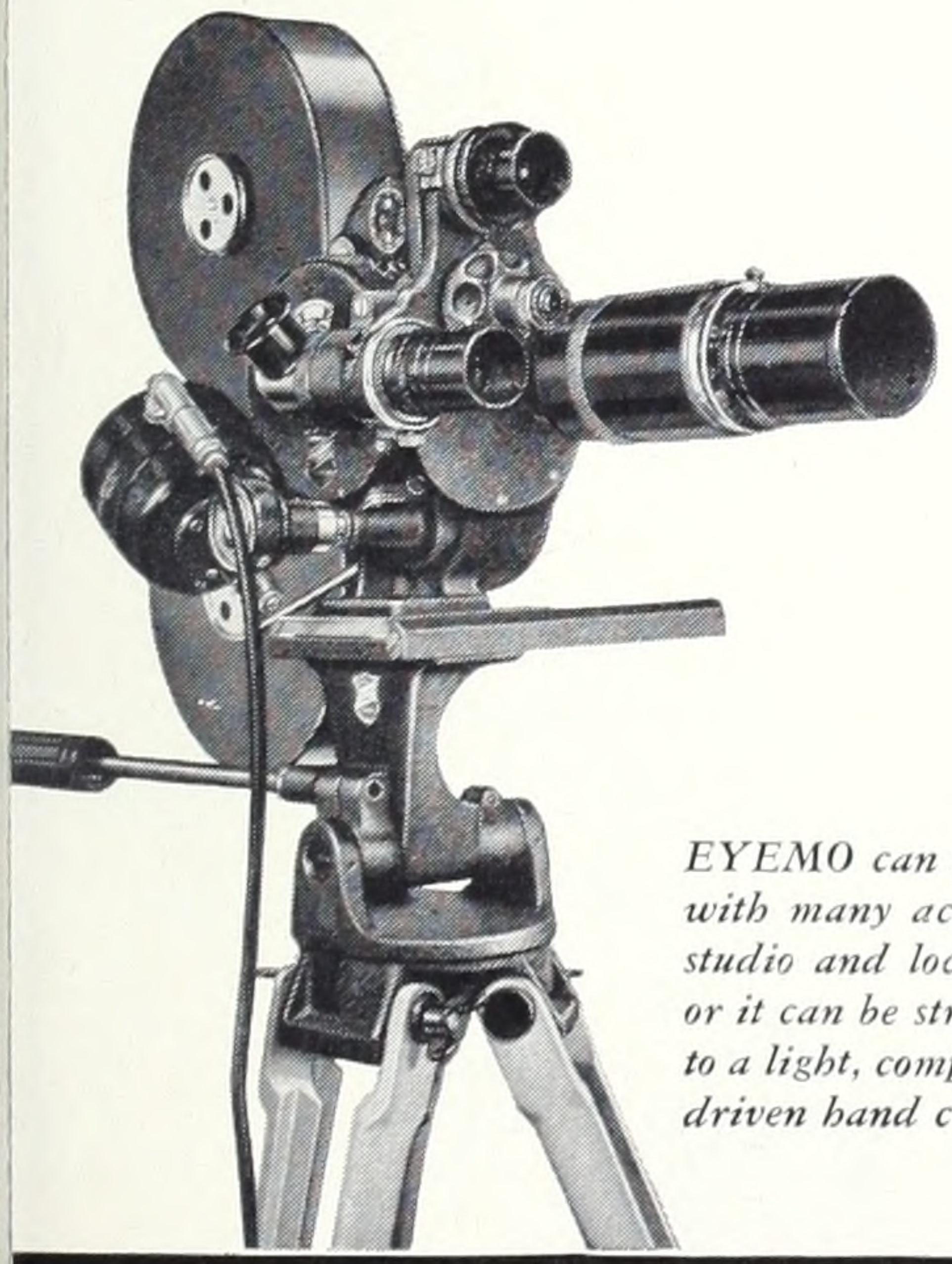

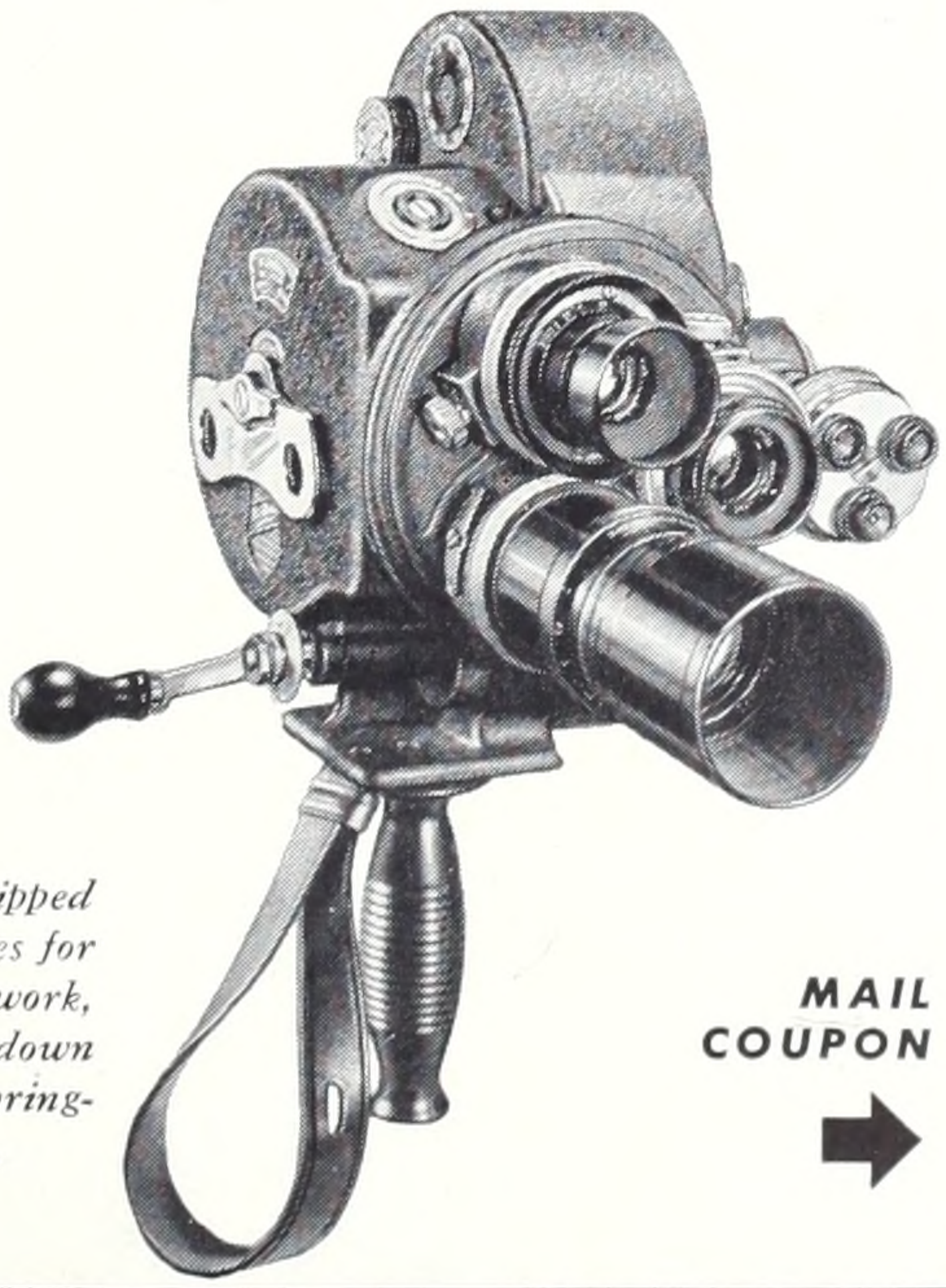

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1782 North Orange Drive   Hollywood (Los Angeles), California
Telephone GRanite 2135

JOHN ARNOLD, President   A. L. GILKS, Secretary-Treasurer

Vol. 22   February, 1941   No. 2

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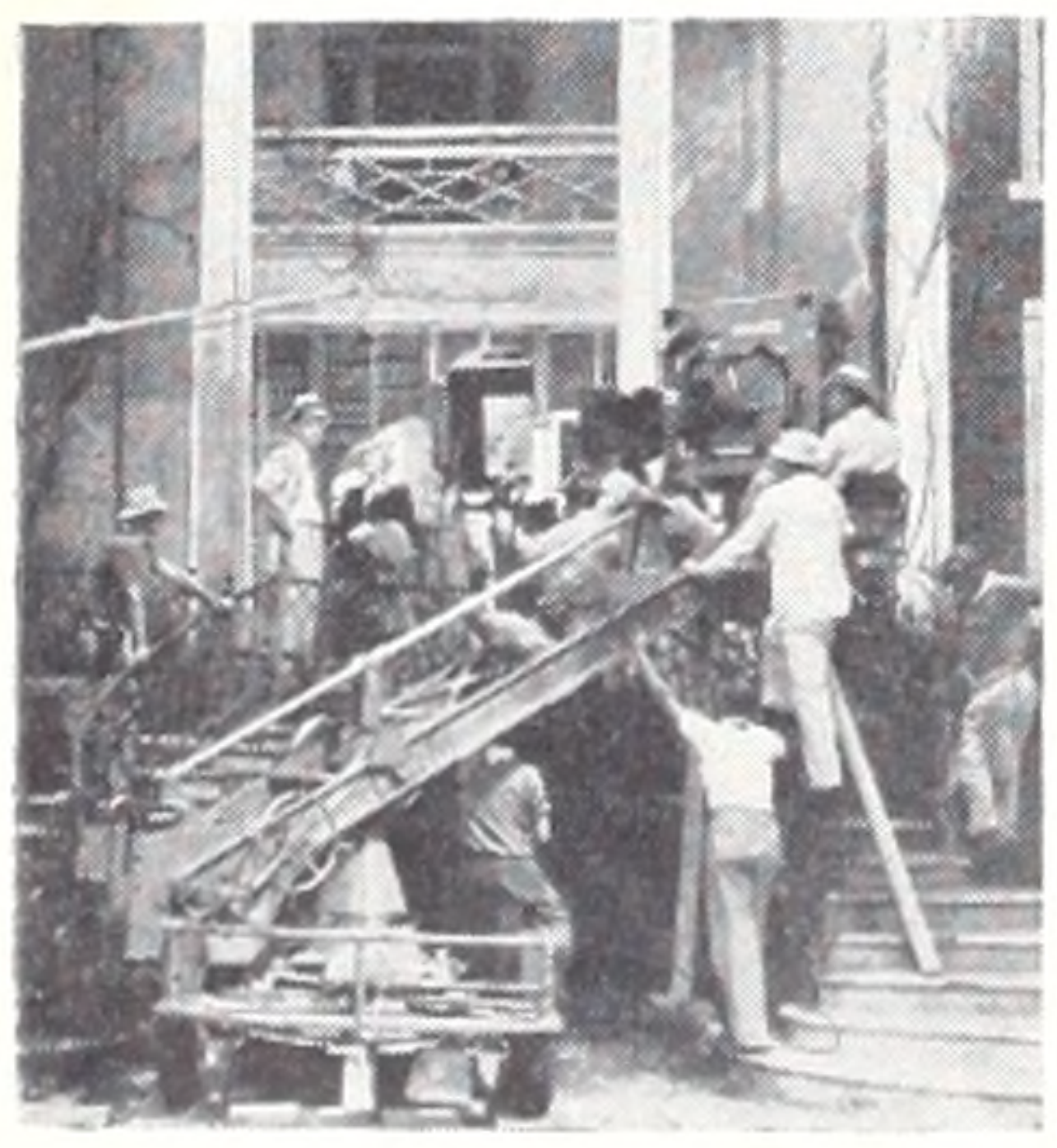

The Front Cover

The cover this month shows Bert Glennon, A.S.C. and William V. Skall, A.S.C., Technicoloring a scene for Paramount's "Virginia," on location in that State, using as a set a mansion designed by President Thomas Jefferson. Note use of camera-boom to facilitate shooting actors on porch, and use of arc broadsides as "booster" lights. Still by G. E. Richardson.

ESTABLISHED 1920. Advertising Rates on application. Subscription: United States, $2.50 a year; Pan-American Union, $2.50 a year; Canada, $2.75 a year; Foreign, $3.50 a year. Single copies, 25c; back numbers, 30 cents; foreign, single copies, 35 cents; back numbers 40 cents. COPYRIGHT 1940 by American Society of Cinematographers, Inc.

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Bob Hurd walked up and kissed his Camera

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Realism for "CITIZEN KANE"

By GREGG TOLAND, A.S.C.

DURING recent years a great deal has been said and written about the new technical and artistic possibilities offered by such developments as coated lenses, super-fast films and the use of lower-proportioned and partially ceiled sets. Some cinematographers have had, as I did in one or two productions filmed during the past year, opportunities to make a few cautious, tentative experiments with utilizing these technical innovations to produce improved photo-dramatic results. Those of us who have, I am sure, have felt as I did that they were on the track of something really significant, and wished that instead of using them conservatively for a scene here or a sequence there, they could experiment free-handedly with them throughout an entire production.

In the course of my last assignment, the photography of Orson Welles' picture, "Citizen Kane," the opportunity for such large-scale experiment came to me. In fact, it was forced upon me, for in order to bring the picture to the screen as both producer-director Welles and I saw it, we were forced to make radical departures from conventional practice. In doing so, I believe we have made some interesting contributions to cinematographic methods.

"Citizen Kane" is by no means a conventional, run-of-the-mill movie. Its keynote is realism. As we worked together over the script and the final, pre-production planning, both Welles and I felt this, and felt that if it was possible, the picture should be brought to the screen in such a way that the audience would feel it was looking at reality, rather than merely at a movie.

Closely interrelated with this concept were two perplexing cinetechnical problems. In the first place, the settings for this production were designed to play a definite role in the picture—one as vital as any player's characterization. They were more than mere backgrounds: they helped trace the rise and fall of the central character.

Secondly—but by no means of secondary importance—was Welles' concept of the visual flow of the picture. He instinctively grasped a point which many other far more experienced directors and producers never comprehend: that the scenes and sequences should flow together so smoothly that the audience would not be conscious of the mechanics of picture-making. And in spite of the fact that his previous experience had been in directing for the stage and for radio, he had a full realization of the great power of the camera in conveying dramatic ideas without recourse to words.

Therefore from the moment the production began to take shape in script form, everything was planned with reference to what the camera could bring to the eyes of the audience. Direct cuts, we felt, were something that should be avoided wherever possible. Instead, we tried to plan action so that the camera could pan or dolly from one angle to another whenever this type of treatment was desirable. In other scenes, we preplanned our angles and compositions so that action which ordinarily would be shown in direct cuts would be shown in a single, longer scene—often one in which important action might take place simultaneously in widely-separated points in extreme foreground and background.

These unconventional set-ups, it can readily be seen, impose unsurmountable difficulties in the path of strictly conventional methods of camerawork. To put things with brutal frankness, they simply cannot be done by conventional means. But they were a basic part of "Citizen Kane" and they *had* to be done!

The first step was in designing sets which would in themselves strike the desired note of reality. In almost any real-life room, we are always to some degree conscious of the ceiling. In most movies, on the other hand, we see the ceiling only in extreme long-shots—and then it is usually painted in as a matte-shot. In the closer angles, the camera seldom shows the ceiling, or even anything suggesting it. On the contrary, conventional interior lighting-effects, since the light is projected from spot-lighting units perched high on the lamp-rails paralleling the sets, come from angles which would be definitely impossible in an actual, ceiled room.

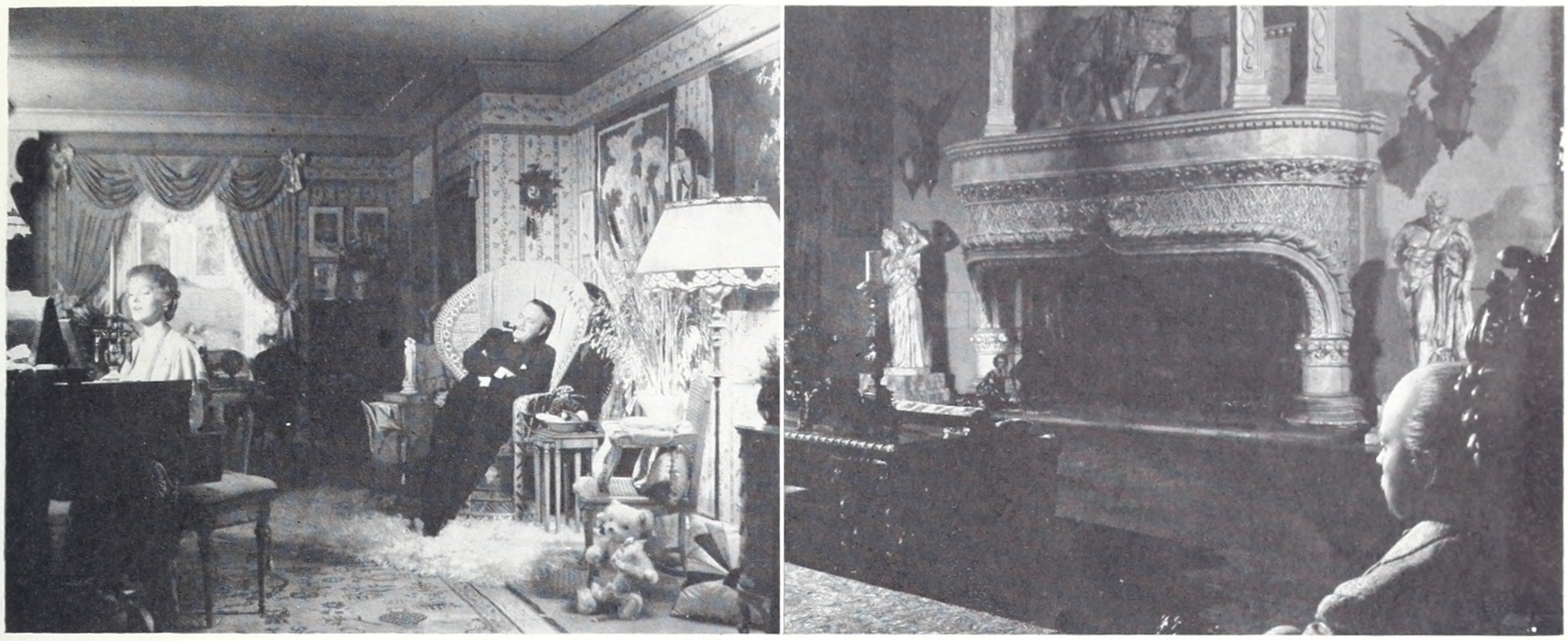
Therefore the majority of our sets for "Citizen Kane" had actual ceilings. They were low ceilings—in many instances even lower than they would be in a real room of similar style. Furthermore, many of our camera-angles were planned for unusually low camera-setups, so that we could shoot upward and take advantage of the more realistic effects of those ceilings. Several sets were even built on parallels, so that we could take up any desired section of the flooring and place the lens actually at floor level.

This, as may be imagined, immediately created a very interesting problem in lighting. Since the sets were ceilinged, not one of the 110 sets were paralleled for overhead lighting. With the exception of a few occasional shots for which we could remove a small section of ceiling to permit using a "Junior" or similar spotlight overhead for really necessary backlighting, everything in the picture was to be lighted from the floor.

With deep sets, this necessitated the use of light which would have great penetrating power. This was found in the twin-arc broadsides developed for use in Technicolor. These lamps formed the backbone of our lighting, supplemented of course with "Juniors," "Seniors," and 170-Amp. arc spots as might be necessary.

In passing, it may be mentioned that this technique of using completely ceilinged sets so extensively gave us another advantage: it eliminated that perpetual

Gregg Toland, A.S.C., (center, back to camera) discusses a scene with Orson Welles (center, in shirt-sleeves.)



"Citizen Kane's" photographic problems. Left, deep, completely ceilinged set; right, extreme depth of field required: both man in right foreground and girl in left background had to be kept critically sharp.

bane of the cinematographer — microphone shadows! The ceilings were made of muslin, so the sound engineers found no difficulty at all in placing their mikes just above this acoustically porous roof. In this position, they were always completely out of camera-range, and as there was no overhead lighting, they couldn't cast any shadows. Yet the ceilings were so low that the mike was almost always in a very favorable position for sound pick-up. I must admit, however, that working this way for eighteen or nineteen weeks tends to spoil one for working under more conventional conditions, where one must always be on the lookout lest the mike or its shadow get into the picture!

The next problem was to obtain the definition and depth necessary to Welles' conception of the picture. While the human eye is not literally a universal-focus optical instrument, its depth of field is so great, and its focus-changes so completely automatic that for all practical purposes it is a perfect universal-focus lens.

In a motion picture, on the other hand, especially in interior scenes filmed at the large apertures commonly employed, there are inevitable limitations. Even with the 24mm. lenses used for extreme wide-angle effects, the depth of field—especially at the focal settings most frequently used in studio work (on the average picture, between 8 and 10 feet for the great majority of shots)—is very small. Of course, audiences have become accustomed to seeing things this way on the screen, with a single point of perfect focus, and everything falling off with greater or less rapidity in front of and behind this particular point. But it is a little note of conventionalized artificiality which bespeaks the mechanics and limitations of photography. And we wished to eliminate these suggestions wherever possible.

Now it is well known that the use of lenses of short focal length tends in itself to increase the depth of field. So, too, does stopping down the lens.

Since the introduction of today's high-speed emulsions, some photographers and some studios make it a practice to take advantage of the film's speed by stopping their lenses down to apertures as low as f:3.5 or thereabouts when filming interiors. In some instances this is done only occasionally, when for some reason added depth may be desired for a scene or sequence; in others, it is a fixed practice.

To solve our problem, we decided to carry this idea a step farther. If using a high-speed film like Plus-X and stopping down to f:3.5 gave a desirable increase in definition, wouldn't it—for our purpose, at least—be a still better idea to employ a super-speed emulsion like Super-XX, and to stop down even further?

Preliminary experiments proved that it was. However, merely stopping down to the extent which would compensate for the higher sensitivity of Super-XX was still not enough, though we were clearly on the right track.

The next step inevitably was to stop down to whatever point might give us the desired depth of field in any given scene, compensating for the decreased exposure-values by increasing the illumination level.

This, especially on deep, roofed-in sets where no overhead lighting could be used, naturally created another lighting problem. Fortunately, two other factors helped to make this less troublesome than might have been expected.

First, we were using, as I have been for some time, lenses treated with the Vard "Opticoat" non-glare coating. In view of the considerable discussion that has arisen since the introduction of these treating methods, I may mention that so far I have found this treatment not only beneficial, but durable. Depending upon the design of the lens to which it is applied, it gives an increase in speed ranging between half a stop and a stop, while at the same time giving a very marked increase in definition, due to the elimination of flare and internal reflections.

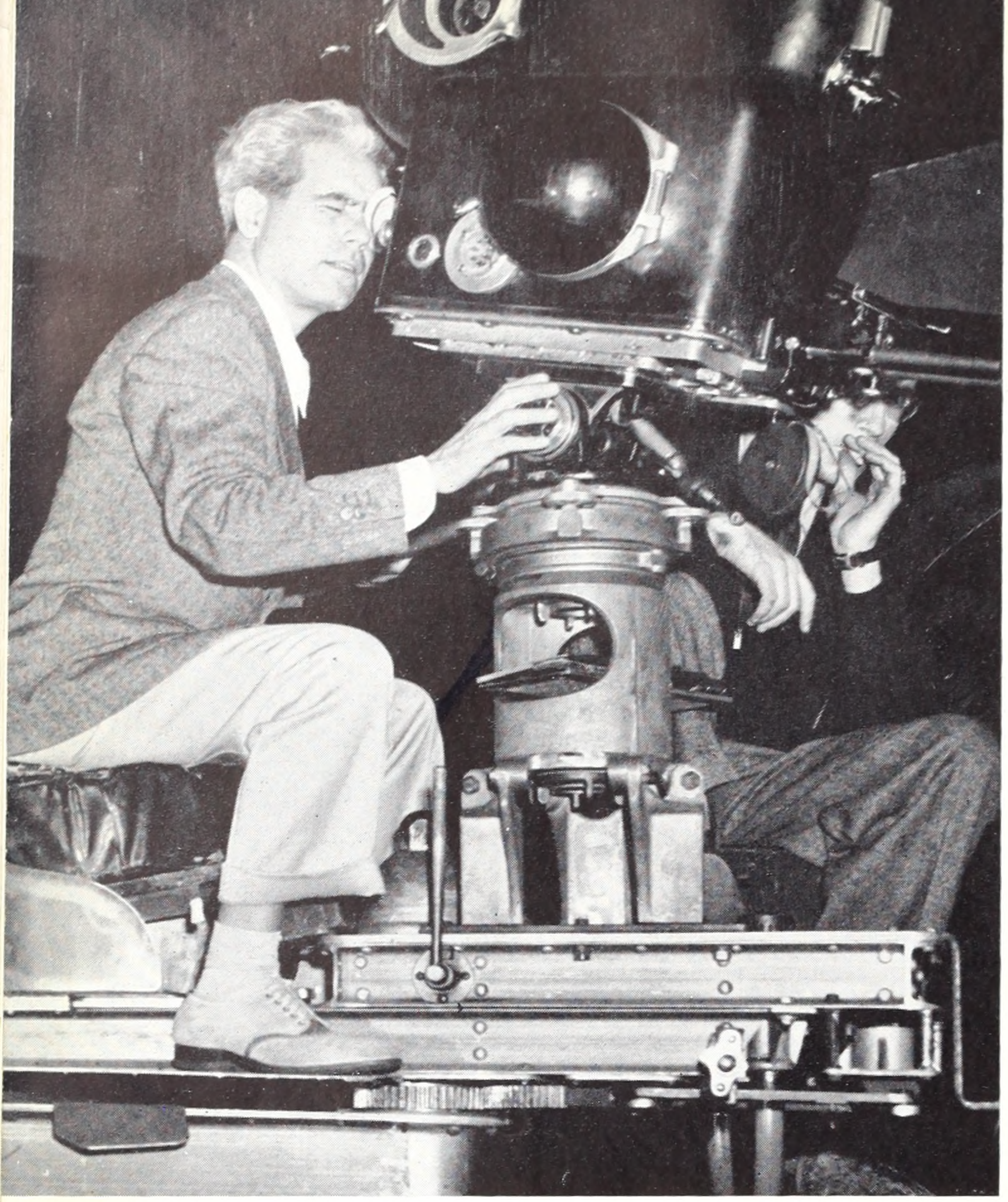
Secondly, due to the nature of our sets, and the lighting problems incident to our use of ceilinged sets, we were, even before we changed from Plus-X to Super-XX, making considerable use of arc broadsides. In addition to the greater penetrating power of arc light as compared to incandescent, this gave us a further advantage, for the arc is unexcelled in concentrating the greatest illuminating power into a comparatively small unit.

The use of these lamps made it possible to use considerably smaller lens apertures than would otherwise have been the case, while still keeping to satisfactorily low illumination-levels, and using surprisingly few lighting units. In many scenes, including even some in the big sets representing Xanadu, "Kane's" exaggeratedly palatial Florida estate, the entire lighting was accomplished using a total of only five or six units, including the arc broads and incandescent spotlights of all sizes.

It was therefore possible to work at apertures infinitely smaller than anything that has been used for conventional interior cinematography in many years. While in conventional practice, even with coated lenses, most normal interior scenes are filmed at maximum aperture or close to it—say within the range between f:2.3 and f:2.8, with an occasional drop to an aperture of f:3.5 sufficiently out of the ordinary to cause comment—we photographed nearly all of our interior scenes at apertures not greater than f:8—and often smaller. Some scenes were filmed at f:11, and one even at f:16!

How completely this solved our depth of field problem may easily be imagined. Even the standard 50mm. and 47mm. ob-

(Continued on Page 80)



Aces of the Camera

II:

NICHOLAS MUSURACA, A.S.C.

By WALTER BLANCHARD

TO director of photography Nicholas Musuraca, A.S.C., there must be a reason for everything. His whole approach to his work seems predicated on the eternal question, "Why am I doing this, and why am I doing it this particular way?" And to him the answer that it is because a thing is supposed to be done that way, or because it always has been done that way, is no answer at all. Before he is satisfied, he must have a practical, commonsense reason that makes direct appeal to his strong sense of logic. If, to get that reason, he has to break established traditions, or evolve new methods, he does it. But he must convince himself that whatever it is is being done in the best and most sensible way possible.

This is shown very clearly in his views on lighting. To Nick's mind, there can never be any fixed rule for lighting a given type of set or action, for each scene is a complete photodramatic entity in itself. It can never be just like any other scene. It has its individual dramatic mood and tempo; often it represents a definite season, or even a definite time of day. All of these combine to set it apart from any other scene, no matter how similar otherwise; and each must be fully considered in bringing it to the screen.

For example, he likes to point out some of the distinctions he had to make in one recent picture between the lighting treatment of scenes in very similar rooms, showing very similar action, but with one taking place at night, and the other in the daytime. It was not just a simple matter of using a low-key lighting for the night-effect, and a fuller lighting—possibly with a sunlight effect through a window—for the day shot. It meant instead a complete reversement of his entire plan of lighting. "In the day sequence," he points out, "I built my whole lighting around what would naturally be the light-source in reality—the window. The dominant sources of lighting for both set and people were placed on that side, and placed low enough so their beams fell at angles which would at least suggest natural light coming through that window. The lighting from the opposite side—necessary of course for photography—would serve largely as filler-light, and would be softer, to hint at the natural effect of light reflected from the inside walls.

"In the night-sequence, on the other hand, my lighting would be exactly reversed. In reality, at night the main sources of light in such a room would be the reading-lamps visible in the long-shots. These would be inside the room, and as the action was played, most of them were located on the opposite side of the players from the now dark window. Therefore to produce a believeable effect, the key light-sources of my shot would have to be on the opposite side from where they were in the day-effect scene. Moreover, they would throw their beams at different angles, to suggest light coming from the practical lighting fixtures which were supposed to be illuminating the room.

"Turning this night-effect into a day-effect — or vice-versa — could never be done merely by increasing the exposure values of negative or print. You might obtain the desired density that way—but you couldn't obtain a convincing, natural effect. The audience might not know what was wrong—but they'd feel something was wrong, just the same. And they'd be distracted from the story.

"As a matter of fact, you would probably make a difference in lighting day-effect scenes in that set according to the time of day represented, for the direction of shadows, projected light-effects, and so on, would certainly be different if you wanted to represent morning, noon and evening."

Nick is no blind adherent of the long-established cinematographic convention that heavy drama *must* be lit in a low key, comedy *must* be lit in a high key, and so on. That, again, must in his analysis depend upon the logic of scene, setting and action. "For example," Musuraca points out, "a vast amount of real-life drama occurs in hospitals. And a modern hospital isn't any means a sombre-appearing place. Everything is light-colored and glistening; what's more, everything is pretty well illuminated—trust these medical men to see to it that there's enough illumination everywhere to prevent eye-strain.

"So why should we always have things sombre and gloomy when in a picture we try to portray sad or tragic action in a hospital? For that matter, one of the most poignantly tragic of all modern death-scenes—Helen Hayes' death-scene in 'A Farewell to Arms'—was filmed in a realistically high key throughout. Charles Lang, A.S.C., certainly deserved the Academy Award he received for that picture.

"In the same way, if there's no logical reason for it, why should comedy always be lit in a high key? Sometimes your action may really demand low-key effects to put it over! You don't think so—? Well, here's an example! In making 'Little Men,' we had just such a scene. The scene showed George Bancroft sitting at his desk, reading; it was a night-effect. While he is engrossed with his study, Jack Oakie tiptoes in through the door, and hides behind the door—unknown to the professor—who calmly gets up and goes out, still unaware that anyone is in the room.

"Now if you had that scene lit in a high key, in traditional comedy fashion, even the most absent-minded or near-sighted old professor could hardly ignore Jack Oakie's presence. I knew that if the scene was to be convincing, we had to make Bancroft's ignorance of the intruder plausible and natural.

"Luckily, the period of the picture—the late 19th Century—helped me. For at that time and in the places represented, rooms were illuminated with the old-fashioned coal-oil lamps. In the long-shots of this sequence, we established two of these lamps: one a desk-lamp, illuminating the professor's work; the other a lamp on a table, casting its glow of light in another portion of the room. The intervening areas I left—as they would be in life—in deep shadow. Oakie was seen entering the room; then as he hid behind the door, he was lost in the deep shadow.

"The audience could then believe that the professor would naturally fail to see him, even as they did. But—they had seen him enter; the professor hadn't. They could enjoy the humor of the situation far better because the lighting helped them to believe the action."

Another point upon which Musuraca feels strongly is that in many ways modern photography has become too complicated—unnecessarily complicated. "There are more than enough things that really *have* to be done," he says, "to make any kind of a picture today: why should we go out of our way to add complication—and make ourselves a lot of extra work?

"For example, take the matter of lighting a set or a person. All too often we're all of us likely to find ourselves throwing in an extra light here, and another there, simply to correct something which is a bit wrong because of the way one basic lamp is placed or adjusted. That's a lot of unnecessary work and worry!

"If, on the other hand, that one original lamp is in its really correct place and adjustment, the others aren't needed. Any time I find myself using a more than ordinary number of light-sources for a scene, I try to stop and think it out. Nine times out of ten I'll find I've slipped up somewhere, and the extra lights are really unnecessary. If you once get the 'feel' of lighting-balance this way, you'll be surprised how you'll be able to simplify your lightings. Usually the results on the screen are better, too!

"The same thing applies to making exterior scenes. One of the commonest sources of unnecessary complication is in overdoing filtering. Just because the research scientists have evolved a range of several score filters of different colors and densities isn't by any means a reason that we've got to use them—or even burden ourselves down with them! On my own part, I've always found that the simplest filtering is the best. Give me a good yellow filter, for mild correction effects, and a good red or red-orange one for heavier corrections, and I'll guarantee to bring you back almost any sort of exterior effects (other than night scenes) that you'll need in the average production.

"What filters—? That's a matter for personal choice. Some prefer one filter, others another, according to their particular methods of working. My own choice is an Aero 1 for the lighter effects, and a G or sometimes a 23-A for heavier effects.

"And by the way—when in doubt about filtering—don't. Nine times out of ten you're better off that way, especially if there are people in the scene. The best example of misdirected enthusiasm for filtering is in making snow-scenes. I remember a while back I was on location doing some such scenes. As we approached our first set-up, my crew came to me and asked what filter they were to use. When I told them none, they couldn't believe me. Everyone used some sort of filter in the snow!

"But what have you really got to filter? Your snow will render as an extreme white, no matter what you do. The evergreens, trees, rocks and so on will come out good and dark. You're going to have extreme contrast no matter what you do. Under these conditions the sky automatically will take its proper place in rendering a pleasing picture. So why filter?

"Filter to control that contrast, you say? I don't agree. Most filters tend to *increase* contrast; in snow, even a Neutral Density filter will do so, for while it may hold back the snow, it will also hold back the dark areas. My experience has been that the real secret of good snow scenes is correct exposure—correct exposure for whatever part of the scene is most important to your shot. Usually it will be the people, and especially their faces. Expose for them, and the rest of the shot is likely to be all right.

"This works out in practice, too. On the occasion I mentioned, my crew couldn't be persuaded that my decision not to use the filter was or could be correct. They were very polite about it, but I could just feel them thinking, 'Poor old Nick—he's a back-number!'

"So I told them to make one take filtering as they thought they should. The operative saw to it that that take was unmistakably marked 'print' in that day's negative reports! He was the first man in the projection-room next day, too, when we ran the rushes.

"All went well until his shot came on. It was off-balance and unbelievably contrasty. The director hit the ceiling, and the operative wished he could sink through the floor! Immediately after, the un-filtered scenes came on—and were perfect. Since then, that gang has been a whole lot less ready to suggest using filters except where they were demonstrably necessary! Embarrassing, maybe—but it takes practical experience like that, often, to prove to all of us that while theories may be fine, the best way to do a thing is usually the simplest—and we can always find that simplest way if we reason things out looking for simplicity and logic instead of technical window-dressing!" END.

Stage Exit Marker

A constructive contribution to safety and convenience was made by studio policeman Bob De War of the Paramount Studio, shown above, who suggested placing an illuminated "Exit" sign above the doors of stages. Anyone who has stumbled forlornly about the dark corners of a stage, far from the bright lighting of the set and thus doubly dark, will realize the value of this simple suggestion.

Fantasound--

Disney's New Sound System

By William Stull, A.S.C.

FROM the time the first vague rumors about Walt Disney's third feature-length production, "Fantasia," began to dribble about the industry, down to the present moment, with the production having its premiere showings in New York and Hollywood, the cine-technical community has been asking itself questions about the radically unconventional sound system around which the production is built.

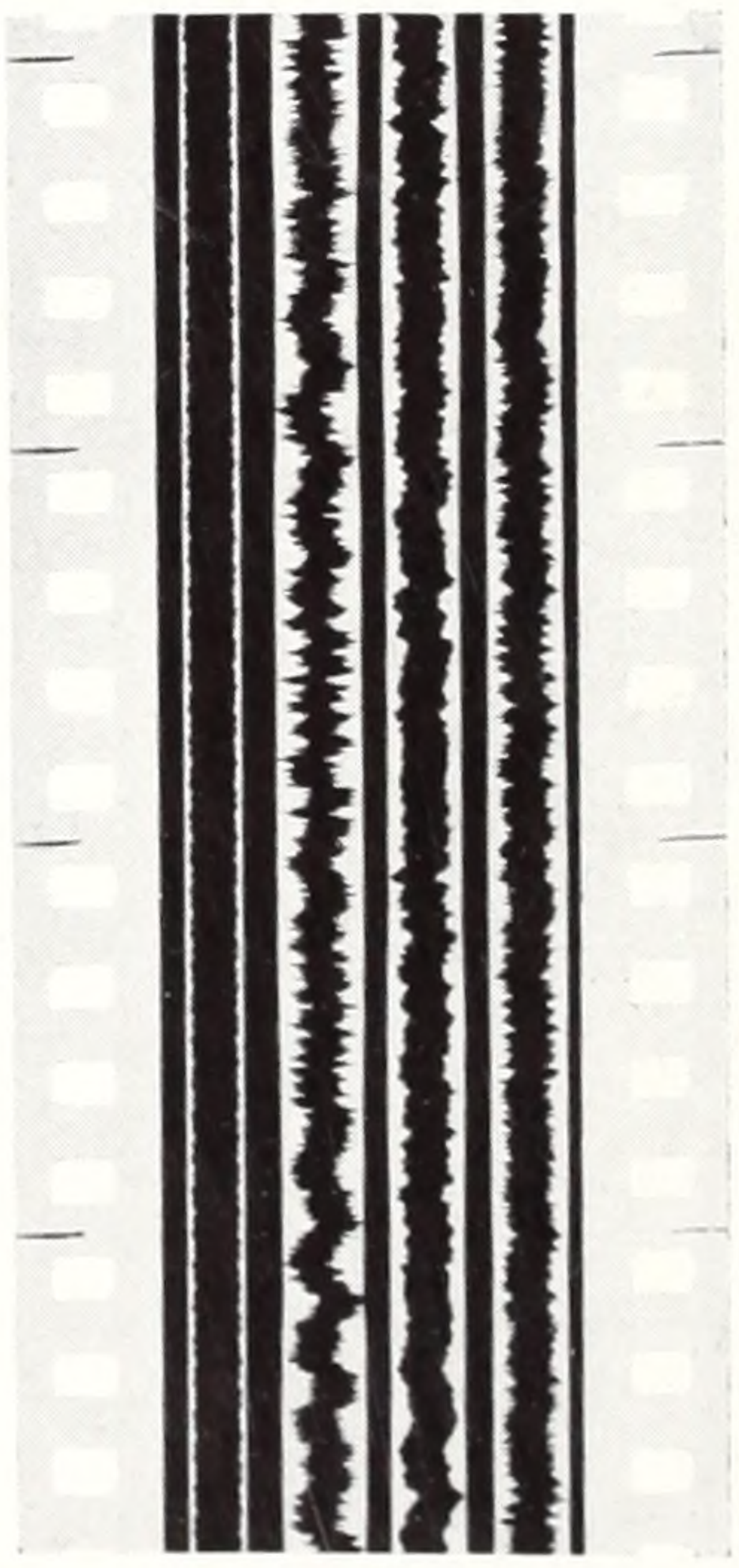
What relation, technicians have been asking, does this "Fantasound" bear to conventional recording? What—if any—is its relation to stereophonic methods? Is it comparable to any existing methods of multiple-channel recording, such as have been previously used to produce close-mixed tracks of orchestral music for conventional productions? In short, what is "Fantasound," how does it work, and what is likely to come of it?

To begin answering those questions, "Fantasound" may be termed a logical outgrowth of conventional recording and reproducing methods, especially the multiple-channel technique. It makes use of standard units wherever possible, assembled in a new way and tied together with special, newly-devised accessories to produce unconventional results. As it now exists, "Fantasound" is emphatically *not* a stereophonic method, even though its effects can when desired be startlingly directional. It is fully possible that the present equipment, however, could be utilized for true stereophonic, third-dimensional recording and reproduction if desired.

The system was really born when two brilliant men with definite ideas about sound, music and movies got together. One of them was of course Walt Disney. The other was Dr. Leopold Stokowski. Both were dissatisfied with the artistic and technical results possible with existing methods and equipment. Disney wondered what could be done to make offstage voices and sounds seem acoustically offstage to the theatre-listener. Stokowski was dissatisfied with the way symphonic music came out of theatre loudspeakers. They pooled their discontents and ideas, placed the problem in the capable hands of the Disney chief technician, William E. Garity — and "Fantasound" was the result.

One of the chief problems in the motion picture re-creation of the music of a big orchestra is the fact that the volume or dynamic range of the music has to be *compressed* to meet the limitations of the sound-recording system. The lowest sound which can be successfully recorded is limited by the background or grain noise of the film itself: when the ratio between the recorded signal and the ground-noise becomes too small, the ground-noise becomes objectionable in reproduction. The loudest sound which can faithfully be recorded is that which (in a variable-area system) gives a 100% modulation, at which the peaks of the recorded wave extend to the very edges of the sound-track area.

Between these two limits is a commercially usable range of about 35 decibels. The actual range of a symphony orchestra, on the other hand, is approximately 70 db. A completely realistic reproduction demands the restoration of the missing 35 db. of dynamic range.



Section of sound film from "Fantasia" (actual size). The three sound-tracks at right carry the records for the three program channels, fed respectively to left, center and right-hand amplifier and speaker systems. The track at the left is the control-track, which automatically controls reproduction of the other three.

Merely adding additional amplification will not do this. For one thing, it is likely to tend to overload the speaker-units. Furthermore, such a blast of sound coming from a single, relatively small source produces an unnatural and definitely unpleasant effect upon the listener.

This brings us to the second problem. In a concert by an actual orchestra, the source of sound—*i.e.*, the orchestra—covers virtually the whole width of the stage. Furthermore, much of the sound produced by an actual orchestra is directed at a higher angle than is the case when the sound is mechanically reproduced through conventional loudspeakers. Accordingly, in an actual performance much of the sound heard by the audience does not come directly from the orchestra, but has been reflected to the listener's ear by one or more points on the auditorium's walls, so that the listener feels himself, so to speak, enveloped in sound.

Therefore the first two aims in the development of the "Fantasound" system were to produce the desired increase in dynamic or volume range, and to spread the primary source of the sound over a wider range, at the same time reinforcing it with secondary sound-sources distributed throughout the auditorium.

In addition, for musical and dramatic reasons, it was found desirable to be able to create directional or semi-directional effects, energizing individual speakers or groups of speakers to reproduce certain portions of the sound which were to stand out prominently from the main body of the recording.

The "Fantasound" system is the logical result of attempting to meet these several requirements.

The orchestral recordings were made in Philadelphia, utilizing the multiple-channel system evolved by Dr. Stokowski and Universal's sound engineers when making "100 Men and a Girl." (See AMERICAN CINEMATOGRAPHER, Nov., 1939, P. 453.) In making these recordings, each section of the orchestra was recorded by a separate microphone and its associated amplifying and transmitting equipment, feeding into a standard RCA Ultra-Violet Push-Pull recorder.* As many as eight of these sectional records were made for most selections. These are in turn combined as may be necessary, with the addition of any solo voices, dialog or sound-effects which may be required, to produce three double-width Push-Pull tracks, which are printed side-by-side on a special sound-track film. Beside these three program-tracks is printed a special control-track, which will be discussed later. This special four-track sound positive is separate from the Technicolor picture-positive, which, however, carries a conventional close-mix sound-track combined from eight or more sound tracks which were used in producing the three program tracks just mentioned, as a measure of safety and convenience.

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* Note: The track was doubled in width in the printing process when the final multitrack prints were made. Standard-width tracks were used in recording and re-recording.

This type of recording inevitably necessitates a special reproducing system. The "Fantasound" reproducers, while embodying as many standard units as possible, were specially built for the purpose by RCA, to Disney designs.

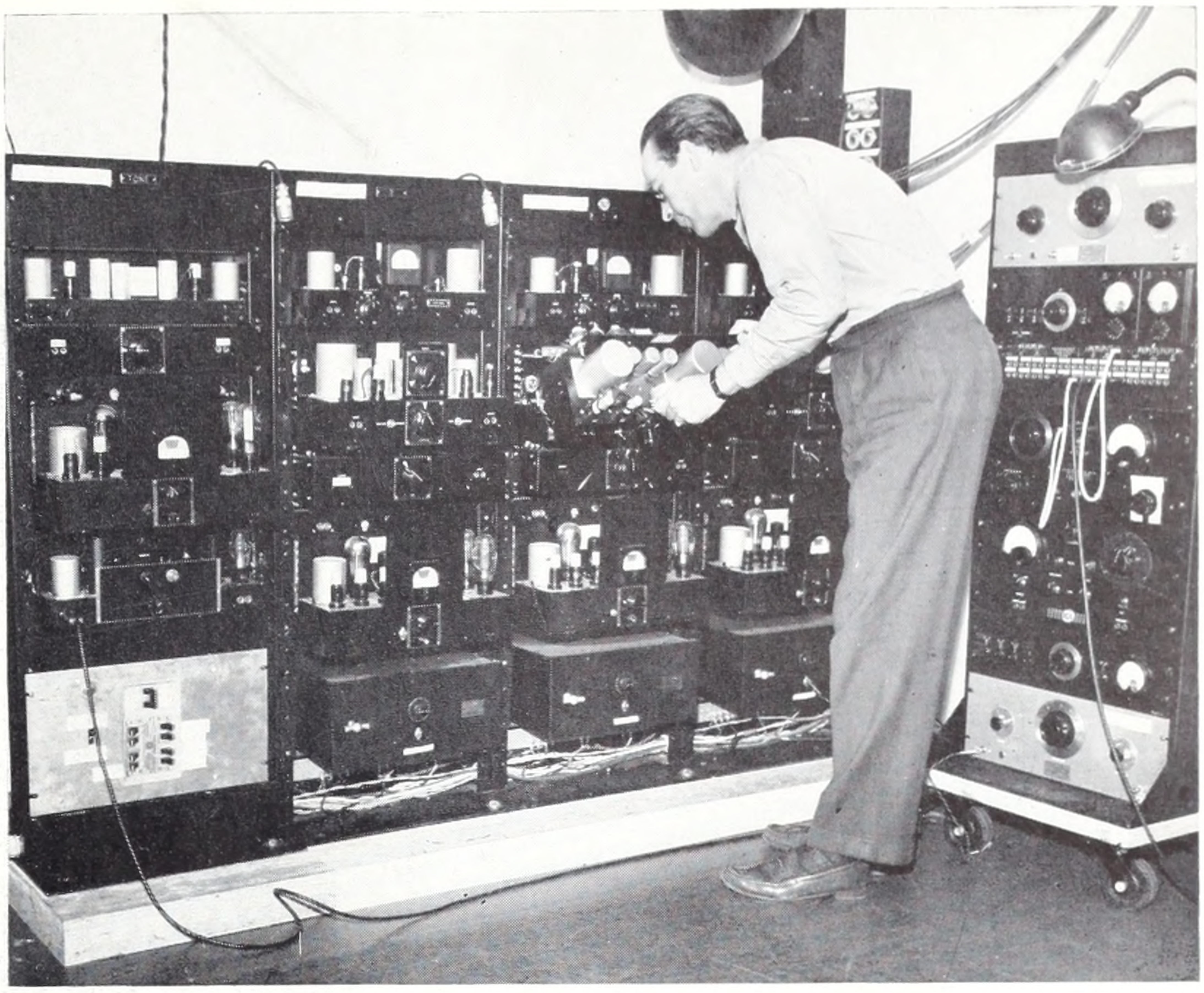
A special multi-track sound-head or film phonograph is used, driven in synchronism with the picture projector by means of Selsyn motors. With the exception of the Selsyn drive and the four-track pick-up, this unit is a standard RCA re-recording head. The scanning system scans all four tracks simultaneously. The scanning beam extends the full width of the film, creating a narrow slit of light across all four tracks. Suitable long-focus optical systems then project the slit-image of each track along a slightly divergent path to its proper photocell.

The signal output of each of the four sound-tracks is then fed through a special relay fader system, and thereafter amplified by four separate pre-amplifiers. Each of the three program pre-amplifiers feeds into a special variable-gain amplifier, which in turn feeds a 20-watt driver amplifier. Each driver amplifier feeds two 60-watt power amplifiers connected in parallel, giving a rated output of 120 watts per channel.

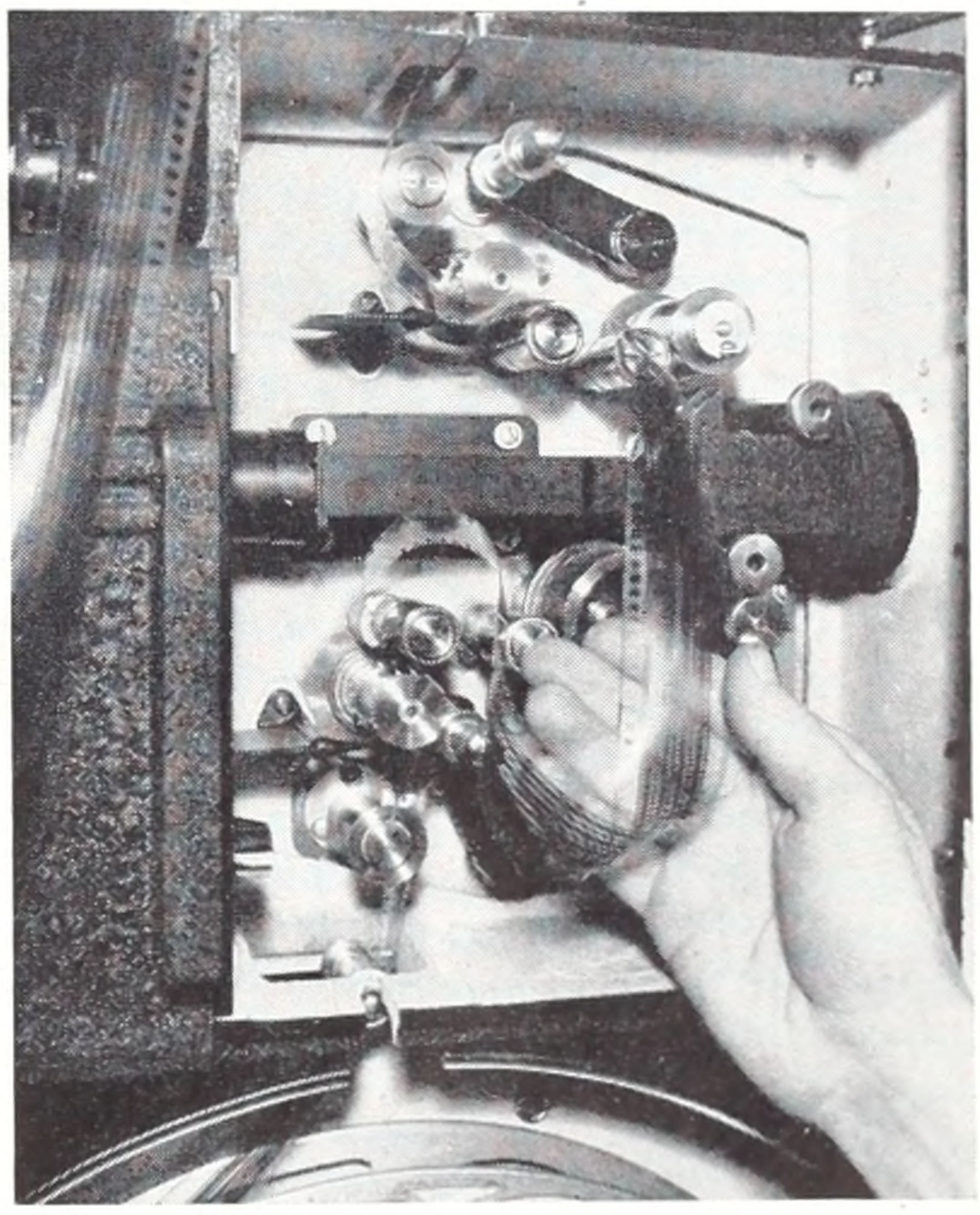
As a matter of fact, however, though these power amplifiers are rated at 120 watts, they have been found actually to deliver 200 watts with less than 2% distortion, making a total undistorted power output of 600 watts available for the three-channel system. The added volume-range obtained by this equipment and technique is approximately 42 db.—or about 10,000 times that possible in a conventional system.

To handle this enormously powerful signal output, three separate multi-speaker systems are located on the stage. One is placed on the left side of the stage, the second at the center, and the third at the right side. Each consists of four large folded-type low-frequency baffles fed by eight low-frequency speaker-units, and one large cellular high-frequency horn with a special throat, fed by four high-frequency speaker units. Thus the triple downstage speaker system comprises thirty-six de luxe loudspeaker units!

The reinforcing or auditorium speaker installation varies according to the size and acoustic characteristics of each individual theatre. In the installation in New York's Broadway Theatre, two additional 50-watt power amplifiers are connected to the driver amplifiers on the two side channels through suitable attenuator pads. Each of these amplifiers in turn drives 22 small cabinet-type speakers distributed throughout the auditorium—at the sides, rear, and even on the ceiling. Thus in this installation, a total of no less than 80 loudspeakers are employed! The installation at Los Angeles' Carthay Circle employs fewer speakers, and has slightly lower output, due to the smaller size and differing acoustic characteristics of the auditorium.



Above, Disney Chief Engineer William Garity inspects amplifying system of Fantasound reproducer.



Below, multiple-track reproducing head for Fantasound.

The entire system is automatically controlled by the fourth track on the film, which controls the three variable-gain amplifiers in the three main program channels. This track is a composite recording of three different oscillator frequency-tones. Each of these control tones is rectified and provides the gain-controlling element for each of the three variable-gain amplifiers.

The control-track is made essentially as follows. After the final re-recordings of the three program tracks have been made, the output of an oscillator generating the desired frequency—say 250 cycles—was connected to the input of the control-track recorder and to a variable-gain amplifier in a standard reproducing system in such a way that any alteration of the amplification of the reproduced music would alter the gain of the recording amplifier recording the control frequency.

Then the recording of the music-tracks in question were played through the reproducing systems, while mixers directed by Dr. Stokowski or one of his associated musicians, controlled the volume in accordance with a carefully prearranged set of cues. Thus as the mixers manipulated the volume-levels of the music-tracks to which they were listening, they also manipulated the volume-level of the oscillator frequency-tone being recorded on the control-track. Thus the three tones for controlling the volume of the three program channels are recorded simultaneously on a single sound track.

In reproduction, this three-tone signal, after the usual pre-amplification, is fed to a special control-amplifier system in which the three frequencies are separated from each other by means of suitable band-pass filters. Thereafter the three control-frequencies, now separated, are fed, each to the tone rectifier and thence to the variable-gain amplifier of its associated program channel. The gain or volume-control setting of each of these amplifiers is automatically varied according to the strength of the control-tone that is used in connection with it. Thus the volume-level of any of the three program-channels may be automatically raised or lowered independently of the others.

In addition, it is possible to control the sound manually in such a way that any given section of the sound may be

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Cut With Script and Camera Says Director René Clair

As told to WILLIAM STULL, A.S.C.

THAT the work done actually on the set is by no means the biggest, or even necessarily the most important part of directing a picture is the unorthodox viewpoint of France's leading cine-craftsman, Director René Clair, now making his first Hollywood production. And he is no mere theorist, this lean, keen-eyed Frenchman; during the past ten years he has put his principles of picture-making to practical proof in the studios of France and England, emerging with such recognized chefs d'oeuvre as "Sous les Toits de Paris," "Le Million," "A Nous la Liberté," and the English-speaking "The Ghost Goes West."

"What is done on the set," says Clair, "is of course important. But it is only one part of a job that has three phases. The first step is in writing the script. The second, shooting the scenes on the stage. The third is cutting the picture. Each phase is important: but, understand, each of these three steps must be carefully coordinated with the other two if the picture is to be produced with the most complete artistic, technical and economic efficiency. And if the director is to give the picture the fullest value of his services, he should participate actively in all three phases, rather than in only one.

"The fact that so few of your American directors are able to do this is really about the only criticism I can make of Hollywood's methods. For the rest, it is surprisingly like working at home in Europe. Of course, Hollywood's studios are larger than those in France, though England's larger plants, such as the Denham and Pinewood studios, are quite as large and modern as any here. Both here and abroad the technical equipment is uniformly modern, and whether you're making your picture in London, Paris or Hollywood you will find plenty of skilled fellow-workers in every department.

"Only in Hollywood, though, do you find such intense specialization. I am constantly amazed how here in Hollywood, everyone seems to specialize in some definite type of work. Even your directors of photography, despite the versatility we in Europe so greatly admire in them, tend to become "typed" for definite classes of work. And it is the same with directors: their field is becoming more and more specialized—and limited.

"I think this has in some ways done an injury, not only to your directors as such, but to the pictures they make. I mean this in both an artistic and an economic sense, for there is a tendency to accept the director merely as a man who simply directs scenes someone else has scripted, and which someone else yet will edit into the final picture. In some ways, this can make for efficiency: but it can also make for inefficiency, too, not to mention artistic shortcomings.

"If you write a script someone else is to direct, you can't be sure that he will visualize the story the same way you do, and accordingly you will probably write things loosely, so as to protect both of you. In the same way, if you are directing from a script you did not help prepare, and which you know somebody else will cut, you are very likely to do a lot of unnecessary shooting to protect yourself, the writer and the cutter.

"In Europe, we could not afford the luxury of working this way. For one thing, we didn't have the money. For another, there was not so much ironclad specialization in the writing and editing fields. The director in Europe is supposed to have full charge of making a picture. Not because he is the director, but because he is, as a rule, the one man who knows every phase of picture-making. Not only does he direct the shooting: he collaborates actively in writing the script and in cutting the picture.

"In my own experience, this system of working seems really the most efficient. Always I am a collaborator in writing the script. Therefore I plan my script much more thoroughly than might otherwise be possible. I know in advance just how I will shoot each scene—and I have this indicated in detail on the script. When I come to shoot the scenes, I know precisely how I want each scene and sequence to fit together in the final print. I shoot them that way—and so I have no need for 'protection-shots,' or for moving-camera shots which won't find their way into the final cut of the picture.

"In the same way, I work with the cutter in editing the film. I know just how I've planned things to fit together; I've shot them so that they would. Therefore in cutting there really isn't much to do except to cut out the slates and splice the scenes together.

"How well this works is, I think, pretty well indicated by the way we've been progressing with my present picture, 'The Flame of New Orleans.' When we commenced production, I noticed that the production office, in estimating our budget, had noted the number of scenes in the script, and set aside an amount of negative film which their experience indicated would probably be necessary for filming that many scenes. Of course, we haven't finished the picture yet—but so far we have used less than half as much negative as the estimate allowed for the scenes we've made.

"I hope this doesn't sound boastful; really, I feel it is not so much to my personal credit as to that of the methods of picture-making I learned when I entered the industry. After all, one of the most vital things about directing is being able to foresee how your scenes will cut together. If you can do this while you are yet working on paper instead of celluloid—preparing the script—you can plan things so that you really cut the picture with typewriter and camera.

"And if things are planned this way, once you start working on the set, you will discover there is only one right way to shoot a given scene. Shoot it any other way, or from any other angle, and it won't fit in smoothly with the rest of the sequence.

"For instance, suppose we have such a simple action as two men talking to each other. We begin in a long-shot, showing them standing together, close enough for normal conversation. Then we naturally cut to separate, closer shots of each man as he speaks.

"Now, from the cutter's viewpoint, there is only one proper way for these closer shots to be made; shot in any other way, they won't cut well together, and the visual dissonance—slight though it may be—will subconsciously distract the audience's attention from the action. Both men should be shown in shots which show their forms as the same size. That is, if our first individual close-up is, say, a head-and-shoulders angle, the succeeding shot of the other man should be a similar head-and-shoulders angle. In the same way, all the succeeding individual close-ups of this conversation should keep this same angle, until we see one man or both move forward or back. Then we can change to either closer or longer angles. But to cut properly, and give a smooth-flowing sequence on the screen, these points should be observed by the director and cinematographer in shooting the sequence. Most directors of photography, being thoroughly versed in screen technique, will be aware of this. But many directors, not being technicians, won't be, and will vary their angles to give variety to the sequence. Such fine points of the technical details of direction can only be fully evident to the director who knows cutting from script to screen.

"Another phase of direction in which

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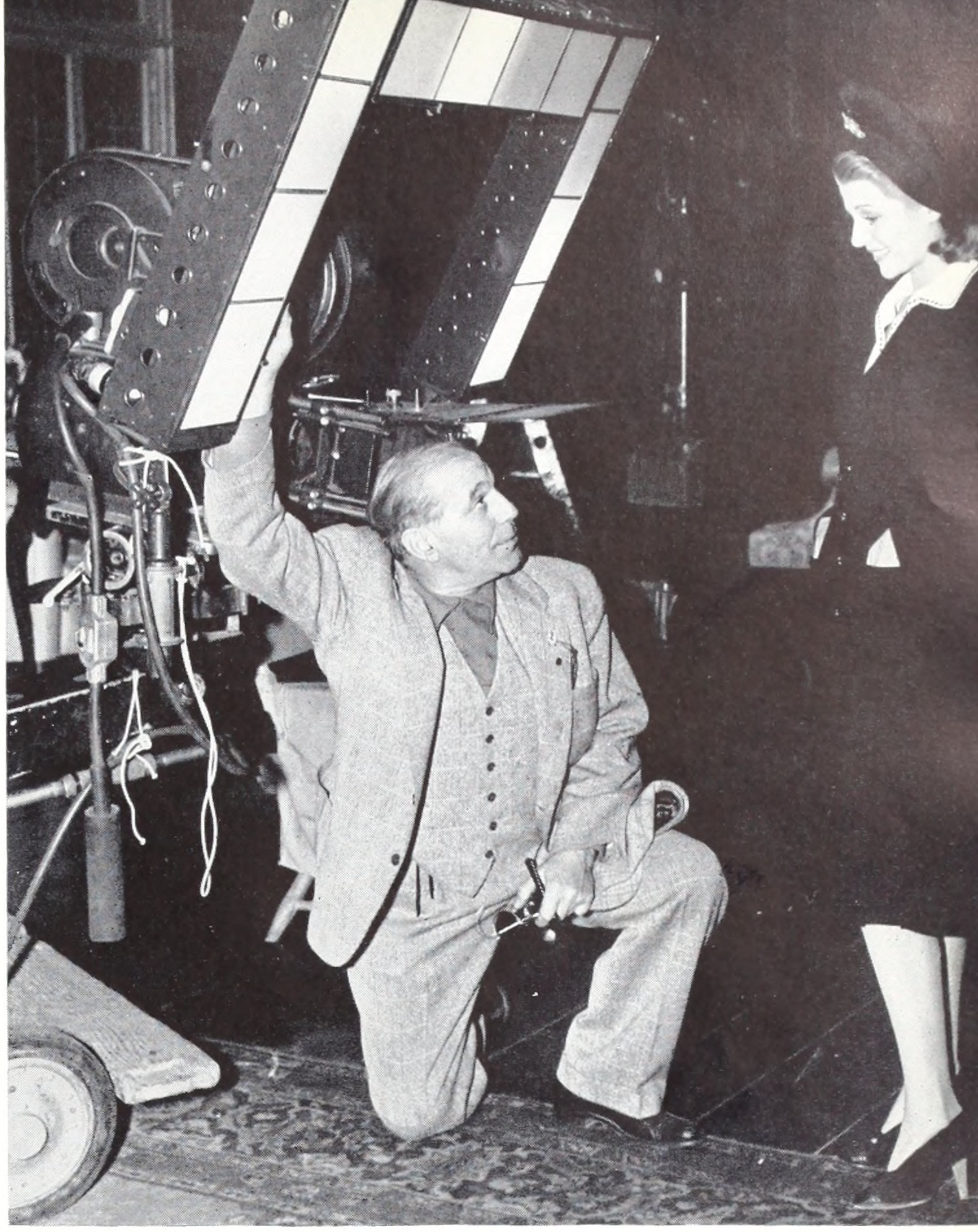

NEW MULTIPLEX LAMP

By TONY GAUDIO, A. S. C.

NECESSITY may be the mother of invention but sometimes just a chronic need for improvement—the feeling that one could use a new wrinkle in equipment if it were available—does pretty well at procreating the longed-for gadget.

My feeling of chronic need for a certain type of lighting, plus the fillip given by problems arising on a particular picture to which Warner Bros. assigned me, did the trick in my case. I went to work at developing a type of light to suit my needs, and it is now in use, actually filming "Affectionately Yours."

Before production began I was able to test the new light extensively on such stars of the picture as Merle Oberon, Dennis Morgan, Rita Hayworth, George Tobias, Ralph Bellamy and James Gleason, singly and in the combinations in which they appear in the script. This enabled me to go into the actual filming of the picture with complete test data to meet every requirement.

The lighting problems confronting a Director of Photography filming certain of these stars are well known in our profession.

My new light was aimed squarely at my principal worries in this regard, but in use it's a shotgun, not a rifle. As each day's shooting goes by, I find it killing more than one bird at a time, and sometimes it gets a whole flock of them.

In structure it resembles a square-toed horseshoe roughly three feet square, and it is mounted like an inverted horseshoe over the camera. Each side and the top is a long rectangle housing four lighting units. These are 100-watt globes controlled by separate switches, so any combination of the total of 12 units may be switched on.

There is only one cable connecting the light with the source of power. It goes through a dimmer, so the candlepower can be controlled as the camera trucks backward or forward, without changing the number of units lighted.

Provision is made for tilting at a slight angle, and also for elevating slightly. But when the angle of light to camera-aim is once fixed, the two remain constant, no matter how the camera is jockeyed around.

In other words, the modelling, key and balance lighting on a subject will not change with camera movement, and all factors that with another type of light would vary continually, remain the same.

Some of the advantages of the arrangement I have described will be apparent to the reader at once. Others I am still finding out as I use it. However, I shall point out a few of them hereafter:

Absence of many cables: I am continually astonished at the convenience of having the equivalent of many small lights near the camera, and moving with it, without the inconvenience of a tangle of separate cables.

Our one light-cable on the camera truck is, of course, no problem at all for the men to handle, even on the most complicated moving shots. Director Lloyd Bacon devised several honeys for us in the course of filming "Affectionately Yours," and I had occasion to say to myself, "Tony, you're lucky you had your light ready in time for this one!"

Of course, I am not saying that 12 lights in a fixed form, even when I have every unit of my equipment on, give the same effect as I might get by juggling twelve separate lights, no one attached to the other. But deliver me from juggling with such complications. The beauty of my device is its simplicity, which might be expected, and its versatility, which is surprising even its inventor.

I throw on two units on the left, let us say, one on the right and one above—just one of such a large number of practical combinations that I haven't figured out how many there are!—and I have modelling, key, balance. Maybe I think a better effect would be secured by using two on the top, one far left and one far right. Or decide that the middle units on top are best. All I do is flick three or four switches.

There is no other way of shifting light-effects of this sort so swiftly and easily. Remember your separate light must be raised and locked in position, or lowered and locked in position, and the tilt adjusted, all two-handed jobs, requiring additional time.

Naturally, on trucking-shots of certain varieties time is saved, also, in

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THROUGH the EDITOR'S FINDER

PRODUCER-Director Howard Hughes a few weeks ago had an automobile accident—one sufficiently serious to incapacitate him for several days, and to keep him away from the set where he was directing his production "The Outlaw." Yet shooting continued efficiently during his absence, for Director of Photography Gregg Toland, A.S.C., with the collaboration of Scenarist Jules Furthman, took over the task of directing the picture.

Reading this in the trade papers, many people in the industry undoubtedly said to themselves, "How clever! Trust Howard Hughes to do the unusual thing!"

But is it so unusual?

We can't quite believe that it is. On the face of things, it may seem out of the ordinary that the task of directing a picture be turned over officially to the man who directs its photography. But it has been done often enough *un*officially and left-handedly—done in a way that places the cinematographer in the case under far worse handicaps than applied in this instance.

What else can you call it when a studio or producer takes a green, un-picture-trained director, fresh possibly from the stage, from radio, or even from some off-the-set phase of motion pictures such as scenario-writing or cutting, and gives him the job of learning how to direct pictures by actually doing it—and is sublimely confident that the apprentice director will be kept from falling into too many mistakes by the unofficial guidance of a picture-wise cameraman? There's no need to mention names, studios, productions or dates: it has been done in every studio in the industry, not only once, but many, many times. More than a few of the raw young cubs who were patiently guided by their more experienced camera partners are now ranked among the industry's better directors. Others, failing to learn, have happily vanished from sight. *But the pictures upon which they got their expensive training were never absolute losses.* They might not be smash hits—even the most optimistic of producers doesn't lavish hit material on these "director-trainers"—but in spite of every handicap, the Director of Photography, left-handedly piloting the picture, would manage to bring in something that was at least saleable. Frequently it was even good.

If these men can do it while teaching and often "carrying" a novice director, isn't it conceivable that they could do better alone?

Today the industry, more than ever before, needs directors who can make good pictures—and make them efficiently. They need directors who know the production ropes so thoroughly they can cut production corners—make small, inexpensive sets look big—minimize the time, effort and money wasted in indecision, "protection-shots," and scenes which never get into the release-print—and who can put a dollar's worth of production value on the screen for every fifty-cent expenditure. These aren't tricks of camerawork alone, but of direction and production planning—of staging action the unusual way instead of the usual—of revising this bit of script or that to permit quicker or more efficient shooting—and above all, of knowing what has been done in other similar circumstances, what can be done, and especially what ought to be done.

Among the industry's Directors of Photography are many men who have wider store of such production knowledge than can be found anywhere else within the industry. They've been making pictures for fifteen, twenty, and even thirty years. They've worked in every studio in the industry. They've worked intimately with scores—sometimes hundreds—of directors. They've seen every conceivable production problem solved (and often solved them themselves) on hundreds of productions.

The old argument that these men are most needed to ensure the photography of the industry's pictures no longer holds. There are more men—and good ones—available today than the industry can use. There are yet other capable young men working up from the operative grades.

In view of all this, we'd like to ask—can the industry afford to ignore the reservoir of trained, experienced director-material it has available among its Directors of Photography?

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TWELVE years of more or less intimate association with the production of this and other magazines has taught us at least one fact about the psychology of the people who read magazines. For some reason, they're much likelier to write to the editor when they see something they *don't* like about the magazine than when they see something they *do* like.

Therefore the really surprising number of letters and personal calls praising our efforts as shown in the January issue of THE AMERICAN CINEMATOGRAPHER is something more than ordinarily gratifying. Some of these messages came from individuals who know us personally; others came from people who, other than the acquaintanceship that develops through the printed page, are total strangers. But they all seemed to have kind words for our maiden attempt at turning out their magazine.

This makes us very proud—and very humble too. Proud because there seemed so much agreement with our ideas of what this journal should be like. Humble because we realize the responsibility entailed in keeping it at the standard they approved, and improving it.

We'd like to express our appreciation to each one individually. But since we can't do that, we want to take this opportunity to say "thank you" to all of them at once—and to pledge again that now and always our efforts will be bent toward making THE AMERICAN CINEMATOGRAPHER the best and most authoritative magazine for everyone who is interested in any phase of cinematography—professional, semi-professional or amateur—and toward making it to a constantly increasing extent an instrument of far-reaching, constructive service, to its readers, to its advertisers and to the photographic and cinematographic industries.

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TERMINOLOGY isn't by any means the most important thing in the world today, but we can't help wondering if the industry couldn't to advantage use a more exact term for the men who make its process and other "trick" shots, and for the work they do. In some studios they're called "process photographers;" in others, "special-effects men;" in one, even, for many years the department handling these out-of-the-ordinary photographic effects was known as the "department of scientific research!"

None of these designations seems entirely accurate. "Process photography" seems about the best, but it is still rather vague. "Special-effects" may apply not only to the photographic tricksters, but to a wide variety of other technicians, from the men who handle special breakaway sets to the explosives experts. Somehow, it seems to us that these men, who contribute so notably to modern productions, deserve an exclusive and unmistakable designation. We'd certainly like to hear some suggestions on the subject. But in picking a name, it is to be hoped we can avoid choosing an involved or cumbersome appellation; we've never forgotten a comment encountered some years ago in a French cine magazine, where a writer, referring to Hollywood's cinematographers, spoke of them as "the men who in English are called 'cameramen,' but who we French refer to more simply as 'operateurs de prise des vues!' "

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PHOTOGRAPHIC picture-making—still or movie—is certainly the most vital of hobbies. In the midst of a world-wide war, with all its inevitable suffering and curtailment of normal personal interests, we still receive an almost-normal quota of photographic magazines from all over the world—even from the warring countries. England, Germany,

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A.S.C. on Parade

Arthur Miller, A.S.C., has been upholding the honor of the camera profession in that current institution of culture, the radio quiz. It seems radio's Dr. I.Q. recently awarded a contestant eight bucks for saying the diaphragm and shutter on a camera are one and the same. **Artie** quite rightfully disagreed, and a mild feud-by-correspondence has resulted. Good work, **Art**—but why not give the Doc a subscription to THE AMERICAN CINEMATOGRAPHER so he'd know the real facts—?

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Gilbert Warrenton, A.S.C., postcards in from Blythe, Calif., to tell us he celebrated Christmas in the Queen of the Angels hospital watching flu lap-dissolve into pneumonia, and is now recuperating in the desert sunshine. **Gil** sends a cheery "hello" to all his Hollywood friends, and says he hopes to be back soon after the first of February. Meantime, he'd appreciate hearing from his A.S.C. fellows.

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Victor Milner, A.S.C., didn't get much of a vacation after leaving Paramount. Universal grabbed him to direct the photography of "The Man Who Lost Himself."

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Meantime **Vic's** buddy, **William Mellor, A.S.C.,** hurried off for a two-weeks' vacation in New York. They do say it's Bill's first visit to the big town. Hope he doesn't come back with a crick in his neck, 'cause he's due to start Paramount's "Pioneer Woman" as soon as he returns.

●

James Wong Howe, A.S.C., has as his house guest Lieutenant Jacinto Chong, Philippine Army officer currently in Hollywood studying motion picture production under Academy auspices. Lieutenant, you are to be congratulated, for you'll certainly learn volumes about both cinematography and hospitality while you're with **Jimmy.**

●

Past-President **Daniel B. Clark, A.S.C.,** is smiling these days. Darryl Zanuck and 20th Century-Fox renewed his contract as Supervisor of Photography. Good judgment, we call it!

●

Joseph Valentine, A.S.C., is another who's wearing an oversize grin. Universal picked up his option with a two-year renewal. This makes his sixth straight year at the U—and for the statistically-minded we'll remark that his recently completed film, "Nice Girl," was his ninth consecutive Deanna Durbin starrer.

●

Karl Freund, A.S.C., assigned to direct the photography of MGM's "Blossoms in the Dust," ought to turn out a notable job on this Technicolored opus, for **Karl** was a Technicolor consultant back in the days when the present process was only a dream in Dr. Kalmus' mind.

●

Rudy Maté, A.S.C., made such an impression on Universal's executives while doing a picture there on loan that they've signed him to a contract. He's now collaborating with his friend and countryman, director René Clair, in realizing (as they used to say in France) "Flame of New Orleans."

●

The other day **William Daniels, A.S.C.,** surprised us by turning up most unexpectedly in the Editorial Office of THE AMERICAN CINEMATOGRAPHER to say thanks for last month's article. Seems **Bill** had been up in Canada on a vacation, and didn't know a thing about it till he came back and saw a copy on MGM Camera-Chief **John Arnold's** desk. But he'll catch up on his reading now, for he's been assigned to direct the photography of "Love Crazy" at MGM, and won't have a chance to go touring for a while.

●

Speaking of going places, **Phil Tannura, A.S.C.,** said something about going somewhere, too. We hope he means he's going to the mountains to shoot those infra-red tests he promised us an article about—! Now will you be good, **Phil?**

●

Over at Paramount, **Charles Lang, A.S.C.,** draws the assignment to photograph "Skylark."

●

Which reminds us that a few weeks ago **Elmer Dyer, A.S.C.,** and his better half celebrated their silver wedding. And they say marriages don't last in Hollywood.

●

Joseph August, A.S.C., goes over to Republic to film their Judy Canova special, "Sis Hopkins."

●

And at Universal, **Milton Krasner, A.S.C.,** goes glamorous on us, filming "Lady From Cheyenne."

●

Now that **Milt's** contribution to the draft cycle (see last month's "Parade") is in the box, it's "front and center" for **Charles Schoenbaum, A.S.C.,** drafted to shoot the works on Paramount's "Caught in the Draft."

●

Henry Freulich, A.S.C., has the financial-sounding assignment of directing the photography of Columbia's "A Girl's Best Friend Is Wall Street."

Polito Tops Preview Poll

Sol Polito, A.S.C., with his sparkling black-and-white camerawork on "Santa Fe Trail," captured premiere honors in the Hollywood Reporter's Preview Poll for December. Second place went to Ernest Palmer, A.S.C., and Ray Rennahan, A.S.C., for their highly pictorial Technicoloring of "Chad Hanna," with Hal Rosson, A.S.C., a very close third for "Flight Command."

Monthly winners during 1940 were: January, Arthur Miller, A.S.C., and Ray Rennahan, A.S.C., for "The Blue Bird;" February, Sid Wagner, A.S.C., and William Skall, A.S.C., "Northwest Passage;" March, George Barnes, A.S.C., "Rebecca;" April, William Mellor, A.S.C., and Allan Davey, A.S.C., "Typhoon;" May, Bert Glennon, A.S.C., "Our Town;" June, George Barnes, A.S.C., and Ray Rennahan, A.S.C., "Maryland;" July, Sol Polito, A.S.C., "The Sea Hawk;" August, Rudy Mate, A.S.C., "Foreign Correspondent;" September, Joseph Valentine, A.S.C., "Spring Parade;" October, Gregg Toland, A.S.C., "The Long Voyage Home;" November, Tony Gaudio, A.S.C., "The Letter;" and December, as just announced, Sol Polito, A.S.C., "Santa Fe Trail." Take your pick, boys, they're all fine jobs — and mighty likely one of them will turn out to be named "Oscar" before February is out!

Random thought—ever noticed the striking resemblance between cinematographer **Stanley Cortez, A.S.C.,** and L. A. Times dramacritic Phil Scheuer—? Wonder if on the strength of it we ought to assign **Stan** to cover some previews for us?

●

And did you know that **George Barnes, A.S.C.,** was an enthusiastic model railroader?

●

Leo Tover, A.S.C., draws the lensing assignment on Paramount's "Hold Back the Dawn." Sounds like a unit manager's prayer when the troupe's on night scenes, doesn't it? Hope it doesn't work out that way, **Leo!**

●

For a speedy right-about-face, we can recommend the switch that **Robert Planck, A.S.C.,** made recently. As soon as he finished shooting added scenes for MGM's "Wild Man of Borneo," the studio put him to doing tests for "A Woman's Face." Versatile, we believe, is the word for **Bob!**

●

Ted Tetzlaff, A.S.C., draws another pleasant assignment. He's to direct the photography of "Kiss the Boys Good-Bye," the Mary Martin starrer.

PHOTOGRAPHY OF THE MONTH

SO ENDS OUR NIGHT

David Loew-Albert Lewin Production, United Artists Release.

Director of Photography: **William Daniels, A. S. C.**

William Daniels, A.S.C., has long been recognized as one of the world's foremost Directors of Photography—but his superb camera treatment of "So Ends Our Night" is certain to advance him to still higher rank among the great masters of the camera. In a previous issue of this magazine, it was pointed out that restraint is a basic point in Daniels' photographic philosophy; that except on occasions where action, mood and story legitimately permit it, he sedulously avoids the spectacular in photography. Well, here is a picture which for once gives him a chance to show what he can do—and how he does it!

From the opening scene to the closing title, Daniels gives a virtuoso performance—in many respects the finest of his career. The sombre mood of the story calls for low-key effect lightings; the locale—Vienna, Munich, Czechoslovakia, Switzerland, pre-war Paris — combined with the strongly atmospheric production design of William Cameron Menzies and the settings of Jack Otterson, insist on strikingly pictorial effects. Bill Daniels delivers—and excels himself in doing so.

It has been this reviewer's privilege to see many examples of masterful camerawork. But seldom, if ever, has he been privileged to see a production like "So Ends Our Night," embracing such a wide variety of dramatic moods and shadings, in which the photography so subtly and yet so surely attunes itself to the ever-shifting emotional moods of the action. Within a matter of moments the many-faceted story shifts the accent from sombre tragedy to melodrama to romance and then to comedy, changing back again as swiftly. Daniels' visual presentation follows these changing emotional cues deftly, and with ever just the precisely right shading. Some sequences are hauntingly beautiful; others are cold and forbidding; others as light and airy as a Lubitsch comedy.

Daniels' camera-treatment of star Margaret Sullavan is a particularly noteworthy example of his sensitive response to story requirements. In one of the later sequences, her dialog brings out the fact that at times she felt old, hopeless and suspicious, and at other times, gay and young. Daniels has the artistic courage to make her look that way. In some scenes he makes her look many years older than either her actual or her character's age; in others, she seems as young and vivacious as the veriest ingenue newcomer. Daniels deserves untold credit for the artistic vision which planned this unconventional, yet dramatically forceful treatment of his star. At the same time, an orchid apiece is due Miss Sullavan, Director John Cromwell, and the producers for their sympathetic understanding, which must have aided Daniels in his efforts to heighten the effect of the star's characterization.

Daniels' skill is no less evident in his treatment of the other stars. He makes Fredric March, for example, appear ten years younger than we've seen him in many a long year, while his treatment of Frances Dee's all too few scenes should make her a Daniels fan for life. Her characterization, too, is aided by Daniels' photographic skill; the contrast between her vibrant aliveness—albeit marred by terror—in her earlier scenes, and her pathetic appearance in the final sequence in which she dies, is unforgettable. Daniels' effect-lighting in this latter sequence—especially her close-ups—are dramatically and visually compelling. Noteworthy, too, is the very subtle change in his lighting of Fredric March in the long-shots immediately before and after his wife's death: it subtly tells of the psychological and emotional change the man's character undergoes in those few, brief moments.

Innumerable other details deserve mention—the way Daniels' treatment of the scenes laid in Vienna immediately following the Nazi anschluss blends subtly with the intercut newsreel scenes of the actual Nazi entry, heightening the feeling of actuality—Director Cromwell's skillful use of silent action to strengthen the effect of innumerable sequences—the special-effects work of Jack Cosgrove, especially the transitions—the musical score of Louis Gruenberg—but space does not permit. Suffice it to say that "So Ends Our Night" is a film of unusual technical excellence, with Cinematographer Daniels at his brilliant best—and it should accordingly be a "must" picture on the list of everyone to whom great photographic achievement means anything!

TALL, DARK AND HANDSOME

Twentieth Century-Fox Production.

Director of Photography: **Ernest Palmer, A.S.C.**

This production is probably not one of Twentieth Century-Fox's "specials," but Director of Photography Palmer brings it to the screen with a photographic mounting that the producers of many a "super-special" production might envy. In keeping with the gangster theme of the plot, Palmer's camerawork and lighting is harshly keyed and virile. While when the occasion permits, he frequently achieves excellent pictorial effects, he does so without at any time subordinating the strength and realism of his treatment.

Realism, in fact, is the audience's first impression of "Tall, Dark and Handsome." The film opens with an exterior on a snow-swept Chicago street on Christmas eve in 1928 which is so realistically handled in camerawork, costuming, set-dressing and the like that one feels momentarily that it **must** be a stock-shot taken from a 1928 newsreel. The rest of the picture maintains this illusion skillfully, though as the action progresses to the gangster's luxurious home, his inevitable super-nightclub, etc., Palmer's camera treatment becomes smoother—but never conventional or moviesque. The early department-store sequence, filmed actually in one of Los Angeles' leading stores, rather than in the studio, merits careful study as an example of what a great cinematographer can do under these none too favorable conditions.

The pictorial highlight of the production is the first night-sequence in the nightclub. With the exception of a single establishing long-shot which seemed a bad match to the rest of the sequence, this part of the picture was a pictorial delight. Palmer has used tonal and lighting contrasts masterfully to achieve striking pictorial effects in almost every scene in the sequence.

As might be expected, Palmer's treatment of the players is excellent. Leading lady Virginia Gilmore in particular has reason to be grateful for Palmer's skill; attractive, but by no means the "glamour-girl" type, with less sympathetic photography her appearance might easily have been such that one would wonder why the tall, dark and handsome gang-leader evidenced such interest in her. Charlotte Greenwood is another member of the cast who should sing Palmer's praises; we've seen her appear to far worse visual advantage elsewhere and on the stage. To be frank, Palmer makes one forget how long ago it was that the lanky lady first appeared in "So Long, Letty."

On the other side of the ledger, a good deal of criticism can be levelled at Director Bruce Humberstone, Film Editor Allen McNeil, and the script clerk. In many sequences, between apparent carelessness in direction and cutting, the geography of the sets is very badly confused, and the direction of movement of the players between their exit from one scene and their entrance in the next—apparently in an adjoining room—is twisted and in some cases actually reversed. In the final sequence, played in a railroad terminal station, Cesar Romero, coming onto the platform to board a train, enters from the left—and a few moments later, the train pulls out, also going to the left. Offhand, we can't recall a terminal station where passengers enter the platform from the engine-end! Someone should have caught these errors, even in a program picture.

MR. AND MRS. SMITH

RKO-Radio Production.
Director of Photography: **Harry Stradling, A.S.C.**
Special-Process Photography: **Vernon L. Walker, A.S.C.**

While this is not the first production Harry Stradling, A.S.C., has made in Hollywood since his return from Europe, it happens to be the first this reviewer has seen. And it makes one wonder why our own studios ever let the French and British studios take an artist like Stradling away from them, and keep him so long.

His handling of every phase of "Mr. and Mrs. Smith" is skillful and imaginative in high degree. In collaboration with the always clever Alfred Hitchcock, he has made very subtle use of camera-angles in the early sequences to aid in planting the impression that the chief protagonists are, to say the least, slightly pixillated characters. The angles he uses in presenting these characters in that vital first few hundred feet while the audience is getting acquainted with them does fully as much as dialog and action to get this impression across.

His treatment of Carole Lombard is a definite asset to that young lady. She is not, and never has been a subject suited to conventional camerawork and lighting. Stradling gives her a simple, forceful key-lighting rather reminiscent of the style with which Josef von Sternberg, A.S.C., made Marlene Dietrich famous. For Miss Lombard, this treatment does two things: it first accentuates her good features (while concealing her less favorable ones), and secondly, gives her a more decided visual personality, which is greatly to her advantage. To put it bluntly, she looks better in this picture than she has in many another.

Special-process cinematographer Vernon L. Walker, A.S.C., also makes notable contribution to "Mr. and Mrs. Smith." In addition to several process sequences in autos, sleighs, and the like—all very well executed—he had to bring to the screen one of the dramatic highlights of the script, in which Miss Lombard and Gene Raymond find themselves marooned in midair as the "parachute jump" ride of last year's New York World's Fair ams, leaving them suspended half-way down. His work here is excellent, for although you know it must be a process-shot, you are never forcibly reminded of the fact.

VIRGINIA

Paramount Production (Technicolor).
Directors of Photography: **Bert Glennon, A.S.C.,** and **William V. Skall, A.S.C.**
Process Photography: **Farciot Edouart, A.S.C.**

As might be expected, Bert Glennon, A.S.C., given another Technicolor production to handle, and with the capable Technicolor cooperation of William Skall, A.S.C., again distinguishes himself. Most of the exteriors for this production were filmed on location in Virginia, and as seems inevitably the case with Technicolor films embracing an unusual number of location exteriors, these scenes seem to have made the greatest appeal to the lay critics, who dusted off their favorite catch-phrases about breath-taking photography.

For this reviewer's money, however, much of the really best photography in the film was in the interiors, which Glennon has invested not only with high pictorial beauty, but also with visual mood which excellently sets the stage for the dramatic mood of the action. The contrast between Glennon's visual treatment of the interiors of the estates still inhabited by the impoverished Virginians and those purchased by the more opulent northerners does more to establish the divergence of thought and circumstances than pages of dialog.

The process photography of Farciot Edouart, A.S.C., is notable, also as usual. Inevitably, there is a great deal of this—one of the principal players even played her entire part without setting foot in Virginia—and it is done with uncommon skill, even for the always-meticulous Edouart. The majority of the process-shots are of scenes which could quite logically have been made by conventional methods—and they are so perfectly executed that even an expert must guess which is normal camerawork and which is process. The scenes of Fred McMurray and little Carolyn Lee, for example, fishing on the placid river, are really notable examples of the skill with which Edouart blends the perspective and tonal qualities of projected background and actual foreground. Viewing the picture, reason insisted that this scene must be a process-shot, but there was absolutely no visual evidence to support the conclusion; yet inquiry proved that it was.

On the less favorable side, both Paramount and Technicolor should be severely criticized for previewing such a poor print as was the case when they previewed "Virginia." During recent years it has been the writer's misfortune to see many indifferent prints—and some downright bad ones — previewed; but never a Technicolor print of an outstanding production which did more injustice to photography and production alike as in this case. Repeatedly there were scenes and parts of sequences which were not yet printed in the correct color-balance; one entire exterior sequence was printed at least three or four printer-lights too dark. Of course, Technicolor can and will turn out better release-prints. But that "Virginia" received such general commendation for its camerawork in spite of the shortcomings of the print previewed is in itself glowing praise of what Glennon, Skall and Edouart achieved. We'd like to see "Virginia" again—in a really well-balanced print, and one which had had the benefit of a bit more editing.

MAISIE WAS A LADY

Metro-Goldwyn-Mayer Production.
Director of Photography: **Charles Lawton, Jr., A.S.C.**

In many ways this is the most pretentious of the "Maisie" series, and Director of Photography Charles Lawton, Jr., A.S.C., has done his part by giving it an excellent visual presentation. Most of the action is played against expansive sets representing something a bit palatial for even a movie millionaire's estate, and Lawton has lit his scenes in a way that takes full advantage of the luxurious form and texture of his settings. The smooth richness of his camerawork adds immeasurably to the dramatically desired impression of opulence.

He had a tricky problem, too, in keeping his visual mood keyed correctly to match both the wisecracking mood of the leading character, and the note of sombre, foreboding tragedy necessitated by the other characters and the plot. He has done this so skillfully that even in the moments of the most far-fetched comedy director and writers could conceive there is a constant undercurrent of foreboding which springs more from the film's photographic mood than from any other source.

Lawton's treatment of the players is also more than ordinarily good, with perhaps the single exception of one or two close-ups of Maureen O'Sullivan which should by all means have been re-taken. The special-effects work is also excellent; both matte-shots and projection-shots have been very capably handled, and add much to the production. In a word, in spite of the handicaps of unusually trite dialog and a somewhat obvious plot, Lawton's camerawork does much to make an "A" picture out of one which, while much more lavishly produced than most "series" films, can hardly otherwise escape a "B-plus" rating. And that, gentlemen, takes genuine cinematographic skill!

THE INVISIBLE WOMAN

Universal Picture.
Director of Photography: **Elwood Bredell, A.S.C.**
Director of Special-Effects Photography: **John P. Fulton, A.S.C.**

Some six or seven years ago Universal made a super-horror production called "The Invisible Man." Today, the same company gives us "The Invisible Woman"—a picture as different from its predecessor as night from day. One was a straightout horror film; the other a comedy, with mystifying camera-trickery thrown in—and produced on something mighty close to a "B-picture" budget, to boot.

The honors in this case are definitely with the phototechnical staff. John Fulton, A.C.S., has advanced his "invisible man" trickery a long way since he first startled audiences with it. To be sure, in this opus he does many of the same old tricks, but he does them very smoothly indeed—and with a much more attractive subject in Virginia Bruce than was Claude Rains in the earlier film. Furthermore, in the earlier effort he had the advantage of relatively low-keyed photog-

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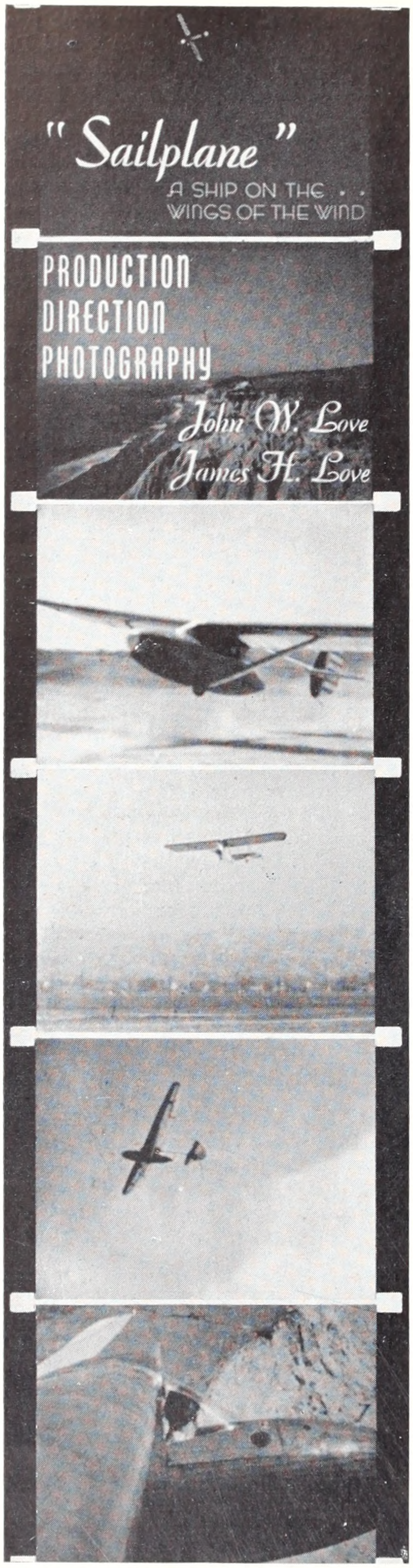


Frame enlargements from "Sailplane." Top to bottom: main and credit titles; take-off; climbing; turning; soaring beside cliffs.

16MM. GOES GLIDING

By JOHN W. LOVE
and
JAMES H. LOVE

WE started this film with no knowledge, and therefore no preconceived ideas about gliders or flying. We happened to see some sailplanes flying in a field by the road one day and, impressed by their graceful flight and general pictorial qualities, decided to make a film about them. Treatment and script immediately became associated in our minds with answering the questions that we ourselves were asking: What *is* a glider? How does it fly? And later, after we began to learn a little about the possibilities of motorless flight: How can a glider remain in the air for long periods of time and travel long distances? Talking with glider pilots, however, led us to believe that there was something even more important than a presentation of facts; that here was a superb sport which offered something unique and deeply satisfying to its devotees. In short, we began to suspect that glider flying was fun, and we wondered if it would be possible for us to give, on the screen, some impression of what it feels like to fly.

We were fortunate in getting the wholehearted cooperation of W. Hawley Bowlus, pioneer American glider expert, who has been designing, building and flying gliders for twenty-five years. Mr. Bowlus, because he thinks that more people ought to know about gliders, contributed not only invaluable advice, but a plane and his service as a pilot. We agreed that, with gliding a sport known to relatively few people, it was essential that a part of our film be devoted to an introduction to gliders. Having been introducing people to gliders for a quarter of a century, Mr. Bowlus was well aquainted with the questions asked, and answering these was the basis for the introduction. This involved nothing more than a simple presentation of the subject-matter, and brought up no special technical problems. Some of the points might have been more forcibly presented by means of animation or working models, but we were without the necessary facilities.

The research necessary in planning our introduction led us to believe even more strongly that, in order to present a complete picture we would have to bring to the audience the sensations of flight. This, so far as we could determine, had never been attempted on the screen. Flight sequences in entertainment films, some of them magnificently done, make the flying incidental to the story. What we wanted to do was to concentrate on the flying itself.

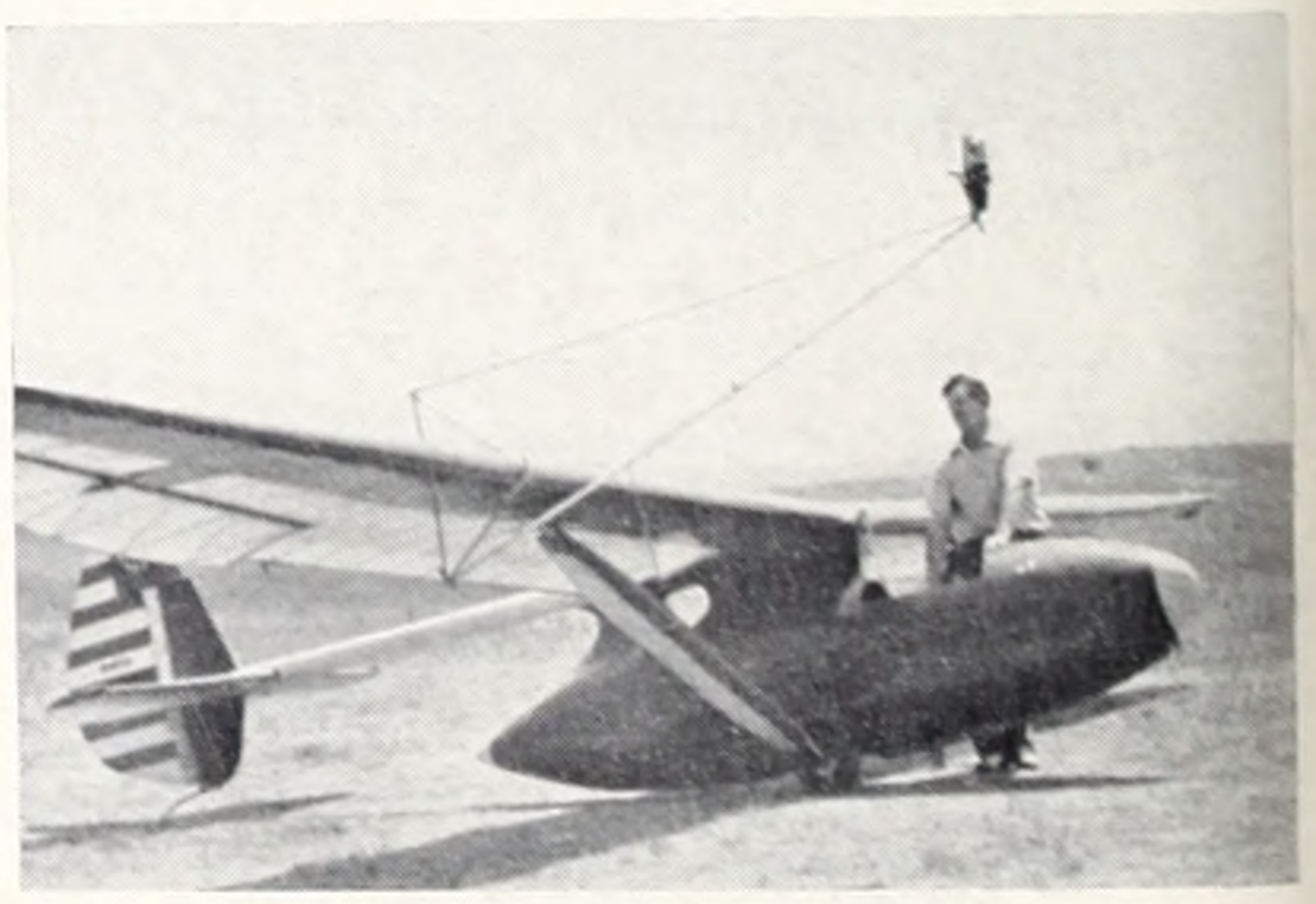
Neither of us had had any flying experience whatever. Reading and questioning pilots brought forth nothing of any value to us. We gathered that fliers were enthusiastic, but none seemed able to give a description that meant anything to us. It was evidently something that we were going to have to find out for ourselves.

At the suggestion of Mr. Bowlus, we decided to learn to fly, taking a regular course of instruction in a light plane and getting in about six hours solo. At the end of this time we had had enough flying to know what it felt like, but not enough to make us forget our first impressions. This left us in a position where we knew what we wanted to do, and the problem resolved itself into one of treatment and technical limitations.

The treatment, we thought, had to be such as to make the film as esthetically satisfying as possible. A glider in flight is very beautiful. You are immediately struck by the resemblance to a flying bird. You are struck by the fact that here is the realization of a dream that men have dreamed for countless centuries. Here are men flying like birds, silently, gracefully. And suddenly you begin to think of the aeroplane, with its noise and vibration, as being an accident of the machine age that temporarily diverted attention from this more real, more fundamentally satisfying kind of flight.

Feeling as we did about the subject it seemed impossible to get satisfactory results with anything but Kodachrome. Special efforts were made in all phases of treatment to make, in all respects, as beautiful a film as possible.

Our equipment was good, but far from elaborate: a Bolex camera with wide-angle, 1-inch, 2-inch, and 3-inch lenses, (the latter two adapted by ourselves from still cameras) and a tripod. In addition we had a matte box, a dolly

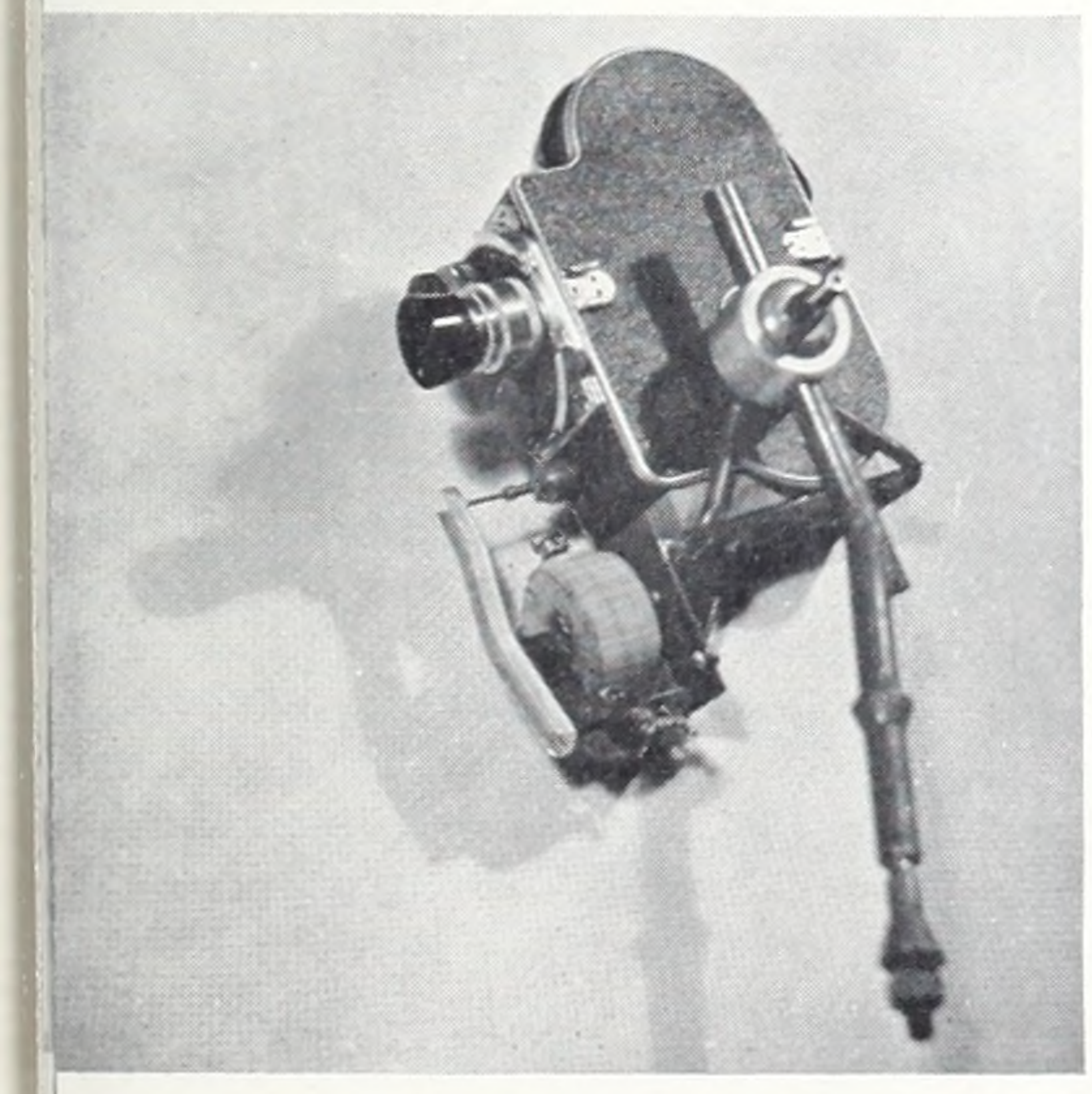


Camera mounted on glider in position to make shot shown in bottom frame at left.

and a frame counter, all made by ourselves. Our problem was, with this equipment, to make a pictorial record of a glider flight from the pilot's standpoint, inviting, as it were, each member of the audience to share the experience. Obviously it would be impossible to do this by taking pictures of the glider from the ground. Aside from the consideration that this is the viewpoint from which all groundlings see planes, and get therefrom none of the impressions of flight, it is impossible in this way to give any idea of the movement of the plane with relationship to the ground. It is, moreover, very difficult to get anything but the "here he comes—there he goes" type of shot which we expressly wished to avoid. Taking pictures of the glider from another plane was discussed and found impractical, not only because of expense, but because this too consists, essentially, of standing on the outside and watching somebody else fly.

So we tried working on the idea of making the camera the eyes of the pilot. This cannot produce satisfactory results if rigidly followed, but it did lay the basis for our treatment. We tried to show the things that are sensed, rather than strictly what is seen from the cockpit. The pilot is always conscious of the plane supporting and surrounding him, even though he sees little of it but the nose, and it becomes for him the one stationary thing in a world that constantly moves beneath him. This dictated the camera position as being attached to the plane itself and, remembering the pilot's consciousness of the plane, set so as to include in the frame an easily recognizable and comparatively large section of the plane itself.

Here we began to run into technical difficulties. The so called wide-angle lens (15mm. focus) of the 16mm. camera doesn't really give a very wide angle of view. If we had had the time and money we might have tried to get a nine or ten millimeter lens ground for us. As it was, we went about it the other way and tried to get more into the frame by getting the camera as far from the plane as possible. We got some aircraft steel-tubing and, with the help of Mr. Bowlus, designed several camera-carrying struts to be attached to the plane. One clamped around the wing and supported the camera at a position about seven feet forward of the leading edge of the wing. Another clamped around the boom (a tube of dural six inches in diameter which supports the tail surfaces). Due to this unique feature in the construction of the plane, this particular support, which was about six feet long, could be used either vertically or horizontally. Coming off the horizontal boom at an angle of about seventy degrees, this support could be clamped at the extreme rear of the boom and angled back to support the camera over the rudder. Or it could be placed just behind the wing and angled forward to support the camera almost directly over the pilot. In horizontal position it gave a camera-position just off the end of the elevator surfaces, on either side. One other bracket was used to hold the camera right alongside the pilot's head.


pecially-built camera-mount and electromagnetic remote-control release.

To attach the camera to these fittings we needed a light, strong mounting, capable of being easily adjusted to any desired angle and which, once set, would be unaffected by the jarring of takeoffs and landings in rough fields (Gliders don't fly from airports with concrete runways!) We investigated all of the tripod-heads on the market without finding anything suitable. The accompanying photographs show the support which we built, which worked very well. One of the reasons for discarding all tripods-heads was that the tilt axis is always below the camera and several inches from the center of gravity of the camera. There is no objection to this when the camera is in normal position, but when swung to point straight down, the camera assumes a position where its weight exerts quite a large turning moment about this axis. Another objection was that a normal tripod-head can be supported from the bottom only. We needed a mount that could swing the camera either above or below the supporting strut.

In our mount we kept both pan and tilt axes as near the center of gravity of the camera as was possible. The mount consisted of a length of ½-inch steel tubing with a bend in it. For attaching to the strut this has a cone and a piece of threaded rod welded to one end. This end was passed through a three-inch length of ⅝-inch steel tubing, another cone slipped on over the screw and tightened with a nut. One of these three-inch lengths of five-eighths-inch tubing was welded to the strut in approximately vertical position at every point where the camera was to be used, allowing us to swing the camera from any desired point. The tilt adjustment worked around a ¾-inch bolt which was bored to permit the passage of the ½-inch vertical tubing. Two thick dural washers were made to pass over the bolt and clamp around the tubing. This construction not only tilted, but allowed the camera to swing around the tube at this point, both move-

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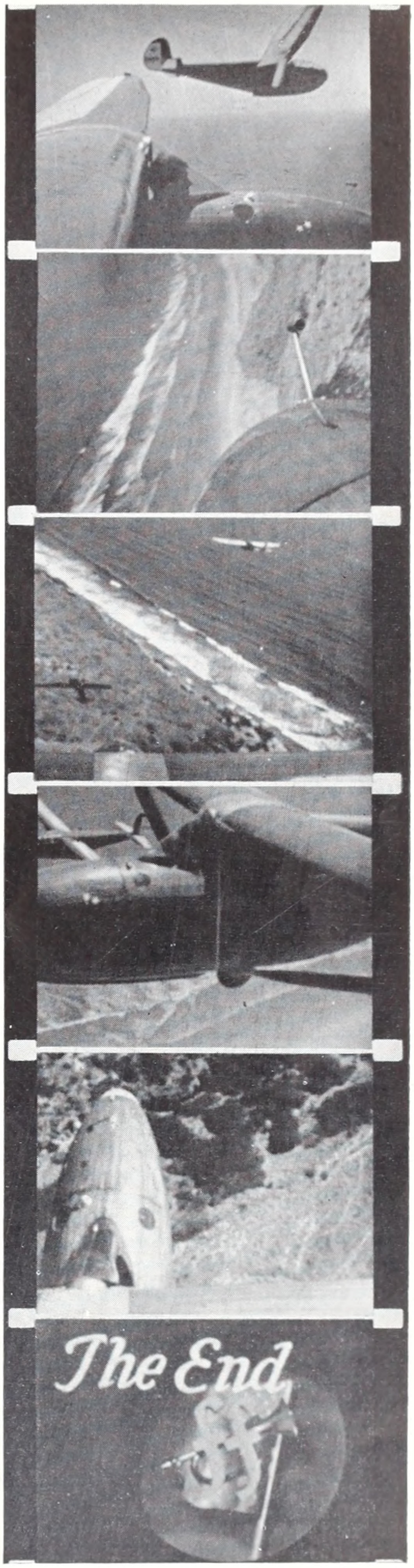

Top to bottom: Passing sailplanes; nosing down; turning—as the pilot sees it; close-up; coming in to land; end-title. 16mm. frame enlargements by Pat Clark.

HINTS ON
Keeping Scenes in Focus

By A. L. GILKS, A.S.C.

WHEN you come right down to cases, there's not nearly so much difference between the problems of professional and amateur cinematographers as you might think. The professional's problems are on a bigger scale, maybe, but they're surprisingly similar, for all that. An out-of-focus scene, for example, is still out of focus regardless of whether it is shot in 35mm. with a $10,000 Mitchell or in 8mm. with a $10 Univex. And methods that help prevent such an occurrance in the Mitchell are likely to work just as well for the man who uses the cine-eight, too.

Studio cine-cameras are fitted with beautifully-made focusing mechanisms by which the film-carrying assembly is slid out from behind the lens and replaced by a ground-glass focusing-screen which, in turn, is viewed through a precision magnifying eyepiece system. You might think this sort of a set-up would automatically cure the professional's focusing worries. But it doesn't. There's always a chance that some tiny mechanical or optical element might jar microscopically out of place, or that some of the peculiar optical characteristics of our modern fast lenses might fool even the cameraman's trained eye. So the professional doesn't put his whole trust even in this de Luxe set-up.

What does he trust? Well, he knows that his lenses have been mounted on the camera with scientific precision. He knows that the focusing-scales on these lenses have been calibrated with absolute accuracy.

So before shooting a scene, he carefully measures the distance between camera and subject with an ordinary tape-measure! If the measured distance fails to agree with the focal setting obtained visually, it's just too bad; you can't argue with a tape-measure. So he sets his lens' focusing-scale according to the tape-measure's indication; he *knows* that will be right.

Amateur filmers who use lenses in focusing mounts will find their worries about correct focus eliminated by following this simple professional practice. The amateur can also take another focusing tip from the professional: since the use of the tape is a routine part of making every professional "take," the professional keeps the free end of the tape permanently hooked to his camera. Thus all the assistant cameraman need do in "running the tape" before a scene is to pick up the reel of the tape-measure, and walk out to the point of focus. Holding the tape taut—not an unpleasant assignment when the point of focus is just above a glamour-girl's smile!—the assistant need only glance down at his hand, and there the tape immediately tells him at what distance to set the lens.

The amateur can follow the same example. A small hook can easily be placed to hold the tape at the side of the camera. Another small hook can be fixed to the case of the tape-carrying reel so the tape can be conveniently hung on the tripod, without having to unhook the free end from the camera.

For that matter, most studio camera-crews like to hang a little canvas pouch to their tripod-heads as a sort of gadget-carrying catch-all. If you looked into one of these gadget-bags you'd find in it as heterogeneous a collection of oddments as you'd encounter in a woman's purse. Camera-cranks—punches for notching film—exposure-meters—a flashlight—bits of chalk—and always a roll of adhesive tape.

I'm glad we noticed that the chalk and tape, by the way. They play a big part in making sure of focus. How do you suppose professional actors manage to walk freely around in their scenes, yet always land at a point in precisely correct focus each time they stop—?

Of course the skill of the assistant cameraman, who stands by and manipulates the focusing dial of the lens, at each point setting at calibrations carefully prearranged during rehearsals, plays the biggest part in this. But if the actors didn't know precisely where they were supposed to stop each time, the assistant's planning would go for nothing.

There's where the chalk and tape come in. During the rehearsals—as soon as the director has worked out his action to a point where he knows further changes are unlikely—each actor's foot-positions are carefully marked. In some instances, chalk-marks are used; in others—especially when working on carpeted or highly polished floors, strips of the adhesive-tape are employed.

In either event, a V is marked in front of each of the actor's feet. This is done for every position where focus is important. Thus the actor can leave his position, walk clear around the set, and yet come back always to the position that will get him precisely in focus.

This little trick can certainly be applied to 16mm. and 8mm. moviemaking. I've seen amateurs, when working outdoors, scuff little foot-marks in the dust or grass to show their subjects where to stand, but they seldom seem to do it indoors. And indoors, when you're working with your lens wide open, and hence at its shallowest depth, is where you need this trick most! Generally you'll find the use of adhesive-tape the most convenient, since it doesn't mark up wifie's carpets or polished floors the way chalk does; a quick pull, and your tape is removed without doing any damage!

Have you ever wondered how in close shots professional actors can walk along, or even dance, without going out of focus? Different studios use different methods, of course, but here's one that can be adapted to amateur use. Making dancing shots, for instance, the players are often enclosed within a good-sized hoop, placed low enough to be out of camera-range, and attached to a pole which in turn is attached to the camera's tripod or dolly. Thus they can dance quite freely within the confines of the hoop—and they simply can't get out of focus! Similarly, in making close dolly-shots of people walking, a T-shaped pole is sometimes attached to the camera-dolly. The actors walk along so that they keep their bodies against the cross-bar of the T—and again, they automatically keep themselves in focus.

The hoop gadget is a bit intricate for most ordinary home movie-making; but the other one can be used surprisingly easily. For your dolly, simply use a child's coaster-wagon. Then you can mount your focus-insuring pole in one of two ways. You can fit it simply as an extension of the wagon's regular handle—in which case your muscular assistants would have to pull the wagon along backward. Or you can bolt the pole onto the back end of the wagon; your assistants would probably thank you for that, since they'll find it easier to pull the wagon along forward than backward.

Another thing you'll notice about focus if you watch professional pictures closely is that as actors and camera move about the set, the focus is constantly changed so that the principal players are always kept in good focus. This is part of the assistant cameraman's job—and if he does it well, you're seldom, if ever, conscious of the changing focus.

Fortunately for the amateur, the 25mm. lenses most frequently used on 16mm. have such great depth of field that this focus-following isn't nearly so necessary in 16mm. as in 35mm. As for the 12½mm. lenses used in 8 mm., even wide open these extreme short-focus objectives have tremendous depth. But even in 8mm., you'll sometimes encounter a scene where following focus may be necessary, or at least helpful.

Once you've done it a couple of times, it isn't nearly as hard as it sounds. Quite a few amateurs I've known have followed focus successfully with exposure, opening or closing the diaphragm to keep the exposure correct as the subject moved from sun to shadow, or vice-versa. It can be done just as successfully with focus, too.

Most home-movie follow-focus shots will call for but one or two changes of

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Fun and Headaches Making

AN 8MM. COSTUME PICTURE

By HAROLD E. REMIER
Los Angeles 8mm. Club

THE filming of a period picture such as "Diary" presents many problems for an amateur photographer. Costumes, props and locations are usually difficult to acquire without the outlay of considerable expense. However, in this instance, I was very fortunate in enlisting the cooperation of an interested assistant, Miss Lucy May Story, who both contributed the leading role in the picture and did much to smooth away difficulties as they arose.

Photographing "Diary" covered a period of several months; five to be exact. However, there were periods of many weeks between shots, during which we were awaiting favorable conditions for obtaining the best possible results for outdoor filming. As I found it necessary to wait for week-ends for my outside shots, many of those were either rainy or cloudy, with the result that our work was frequently postponed.

A thoughtful consideration of the material at hand with which to work played an important part in choosing the plot of "Diary." Miss Story's home is of the Southern Colonial type, furnished with many authentic antiques; a friend collects historic costumes as a basis for lecture tours, while I personally list a small ranch house among my assets. These three factors alone formed the basis of the picture, and it was agreed that the plot finally chosen exploited our material at hand to the best advantage. The plot is as follows:

Briefly, prior to the Civil War, a young couple elope and later reside on a large plantation of the Old South. During the years of the war, they lose everything and join the exodus to Oregon and a new life. With only a few personal belongings and a borrowed wagon, they finally reach Colorado, where the wagon breaks down with the result that, in desperation, they build a home on an abandoned mining claim. The husband discovers a rich vein of silver and sudden wealth takes them to Denver, where a parting is brought about through a flirtation between the husband and an opera-singer. Many years pass, a crash in the silver market makes the husband penniless but restores his senses; a reunion at the old mining claim closes the picture.

While it may easily be seen that this plot could be well adapted to our props and locations, many problems arose during the filming of the picture. Most scenes depicting life on the plantation were taken at the Kellogg Ranch. As it was necessary to film such scenes on Sunday, it meant doing so in the presence of literally scores of onlookers who gathered there for the weekly horse show. I can assure you that it requires courage to be dressed as a belle of the 1860's as was Miss Story on those occasions and yet be expected to act nonchalant before the bewildered stare of the crowd.

To obtain a wagon with which to depict the trek to Oregon, without the expense of renting a horse as well, offered a problem indeed. After a lengthy search, a ranch-owner in the vicinity of my week-end place offered the use of an antiquated wagon which had stood unused in his barn for more than twenty years. It was exactly what we desired for the picture as it dated back almost eighty years, but the farmer could not offer a horse trained to pull it. It was necessary to lift the wagon up on stilts and film it from the ground with the wheels spinning to create the effect of motion. Long-shots of us loading the wagon were accomplished by coaxing, with considerable effort, an untrained horse to stand before the wagon while we decorated him with various bits of antiquated harness and trappings, not knowing at what moment during the scene our horse would bolt away, leaving the wagon unattended!

Our most hectic experience occurred when we discovered that it was necessary to borrow costumes from the friend a second time for retakes, with the discovery that they had been packed away

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Two scenes from Harold Remier's 8mm. period production, "Diary."

Commonsense TITLE-MAKING

By CLAUDE W. A. CADARETTE,

Founder, L. A. 8mm. Club.

THE first impression any audience gets of a picture comes from the main title. Therefore titles should be as carefully executed as possible to increase the desire of the audience to view the balance of the picture. The name of the picture should be apropos to the story, and cleverly worded to incite appeal. Just as book titles are worded to catch your eye at the book stalls, your films need this peculiar interest to create a receptive mood in the audience.

However, wording of the title is not sufficient to guarantee its attractiveness. The neatness of lettering, balancing and spacing of the words are integral parts to be seriously considered. Typewritten titles have no place in any kind of a picture.

The style of letters should conform to the type of picture as near as possible. Scenarios of a historical theme should be titled with an Old English style, while a Bold Gothic is suitable for a murder or dramatic type of picture. Various letter styles can be composed to be consistent with the film if a little ingenuity is used by the producer. You have undoubtedly noticed that the titles on the professional screen are often made in a higher key than formerly, replacing the old white letter on black backgrounds. In order to avoid too white a screen, the titles are carefully shaded and often spotted with shadows. It is just as important to properly light a title imaginatively as it is to correctly light a portrait. Modern titles have not the extreme contrast as in former times, but are smooth blendings of light and shadow used propitiously to make for easy reading and a decorative screen.

After an attractive main title has flashed on the screen, the subsequent titles of credit should be in the same lettering style and lighting. The only changes that are apparent are the size of the letters and wording of the title. The lighting effects should remain the same through the entire set of titles in order that the screen brilliance be uniform. The last title should always fade out to end the sequence, then fading in to the first scene of the picture.

I don't want to give the impression that your titles should be decorative or gaudy to an extreme point, because a meretricious display of titles will also detract from your picture.

The use of subtitles in the scenario should be very limited, and used only for such places where the action of the story fails to relate the change of plot, location or time. Titles, at their best, retard the tempo of any picture, and should be substituted whenever possible by the use of montage-effects or pictured abstractions. In travelogues, the use of road-signs, or guide-posts will eliminate a large number of monotonous subtitles and maintain the tempo of the picture to a greater extent.

Conversational subtitles are less distracting when broken up into phrases and interspersed between scenes of the character. As an example, we first view the close-up of a girl as she starts to speak "The doctor says he will die—" then cut back from this subtitle to the girl as she continues to speak "—unless he has an operation." Another cut-back to the girl as she finishes speaking, then a cut to the other character who has been listening to her. This type of back-and-forth cutting will lessen the retarding of the tempo as each subtitle does not remain long on the screen. Keep all conversational subtitles as short as possible and endeavor to tell your story as clearly as possible with pictures.

Lapses of time are more effective when pictured by shots of a clock, calendar, hour-glass or some object synonymous of a passage of time rather than a stereotyped subtitle of "Meanwhile" or "In the Meantime." The use of a fade-out and fade-in will often serve this purpose, but it is well to remember that pictured actions should be kept on the screen as much as possible so that the mind of the audience has no opportunity to relax. Keeping their minds constantly alert is a good indication of a fine film.

Too many amateurs have a feverish desire to animate their titles by having the letters jumping all over the screen. This practice, as I see it, is a deplorable exhibition of egoism. My reaction to a title of this nature is unkind as it seems to display a cameraman's ability to shoot single frames. Nothing is gained by jumping letters and it is certain that the title must remain on the screen for a longer period, whereupon the title gets two strikes against it.

Do not confuse an animated title with the titles which are lap-dissolved or superimposed on a moving background. Beautiful, smooth transitions of titles can be done by lap-dissolving from the main title to the credit titles without creating a screen disturbance. A pleasant first impression will be gained by this method and if it is well executed, the film will merit a higher rating in a contest. Wipe-off titles are also attractive and disclose a better knowledge of technique on the part of the cameraman.

Superimposed titles on moving backgrounds are excellent for main titles of documentary or travelogue films *provided* that the background scenes are properly related to the balance of the film subject. A main title of "Washington, D. C.," superimposed over a picture of the White House or "Cotton" on a plantation background are co-related—but don't use a title of "Yellowstone" on a background of the Grand Canyon.

Kodachrome titles are more difficult to film, because in addition to all of the problems encountered with black-and-white titles, a great deal of consideration must be given to the choice and hue of color used in the background and in the lettering. It is commonly known that red letters on a green background will cause an illusion by which it appears that the letters move, so it is obvious that this combination cannot be restful to the eyes, and more obvious that it has no place on the screen. One should confine their use of colors for backgrounds and lettering to the tints and shades of the primary colors and never use the full strength of a primary color. Brilliant colors are disturbing and gaudy, while the softer shades will, if correctly chosen, provide sufficient contrast for easy reading.

It is a common practice to use tinted positive film-stock for titling Kodachrome. Of course, this is better by far than using a black-and-white title in a color film, as the eye becomes accustomed to viewing color. It is entirely unorthodox to subject your audience to a combination of color and black-and-white strips of film in the same reel and tinted stock will help considerably to overcome this deficiency.

Yet, as the use of titles is kept as a minimum, isn't any color film that warrants the expense of titles deserving of titles made with Kodachrome? It would be unwise economy to attempt to save money on the shortest strips in a reel.

An interesting way to introduce a scenario or travelogue with a different slant will add more zest to the film. I have in mind a few films that have opened with a fade-in of a person seated in front of a fireplace, reading a book. A medium shot registers the hands closing the book, showing the title on the cover. Another shot of the person lap-dissolves into the first scene of the picture giving a transition of the man's thoughts. One film that opened this way was Randolph Clardy's "New Horizon;" another was Harold Remier's "Diary."

Another idea for a travelogue can be used by opening the picture with a shot

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Caribbean Camera Cruising

By CHARLES W. HERBERT, A.S.C.

ONE of the most accessable and promising fields open to the amateur travelloguer today lies in the Caribbean Sea. Here a string of islands, like stepping stones, form a huge two thousand mile bow stretching from the tip of Florida to the north-central projection of South America. Along its roadways and channels have sailed an endless procession of adventurers and treasure seekers since Columbus first sighted San Salvador in 1492.

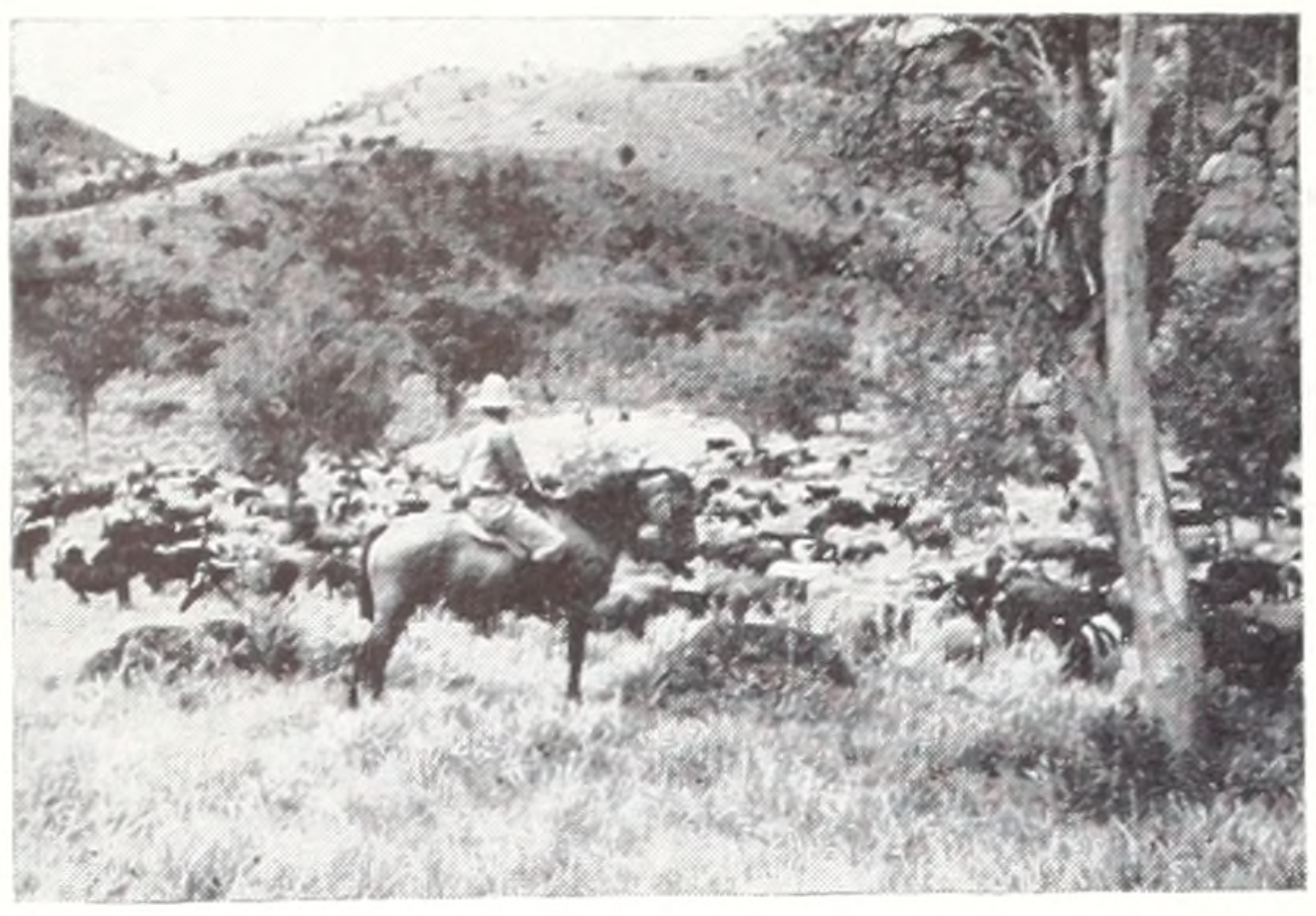
Today, well-appointed cruise ships carry you in complete comfort along courses laid down by discoverers, adventurers and conquerors. A trip through the West Indies should net you enough to make several reels. On my last trip there I turned out seven "Going Places" reels for Universal in five months. If you've enough wind in your sails and film in your camera, there's plenty to keep you busy for several months, if you can spare the time. But if your trip is limited to the usual cruise schedules you can still count on filming the highlights at each port of call.

February, March and April are ideal months for a trip through the West Indies. The sky is blue, usually decked with clouds; the sun is warm and yet the air is not depressing. You will have lots of ambition and inspiration. There is a popular fallacy about the West Indies which photographers seem to pass on. They say the light is intense and that you will burn up your film. I've found very little difference between working there and high up in the Rocky Mountains when the general character of the picture was the same, that is, when the composition is made up of green grass, trees, mountains with predominating green, and blue skies with occasional clouds.

There are times, though, in tropical cities when glaring white buildings predominate in your picture, when you will need to cut down your exposure greatly. It is not the longitude or the latitude which is responsible, but the character of the man-made structures. It is particularly difficult to get an even exposure looking down a street that has sun on white buildings on one side and heavy shadows under sidewalk-coverings on the other. A graduated filter set vertically in your camera so that the heavy area covers the bright side of the picture and the clear area overlaps the shady side of the street will do the work as well as can be expected.

Since any photographer journeying through the West Indies would be on a picture-hunting expedition, I am going to try to list the outstanding features of each island with which I am acquainted.

Cuba, our nearest neighbor, and the island most visited by American tour-



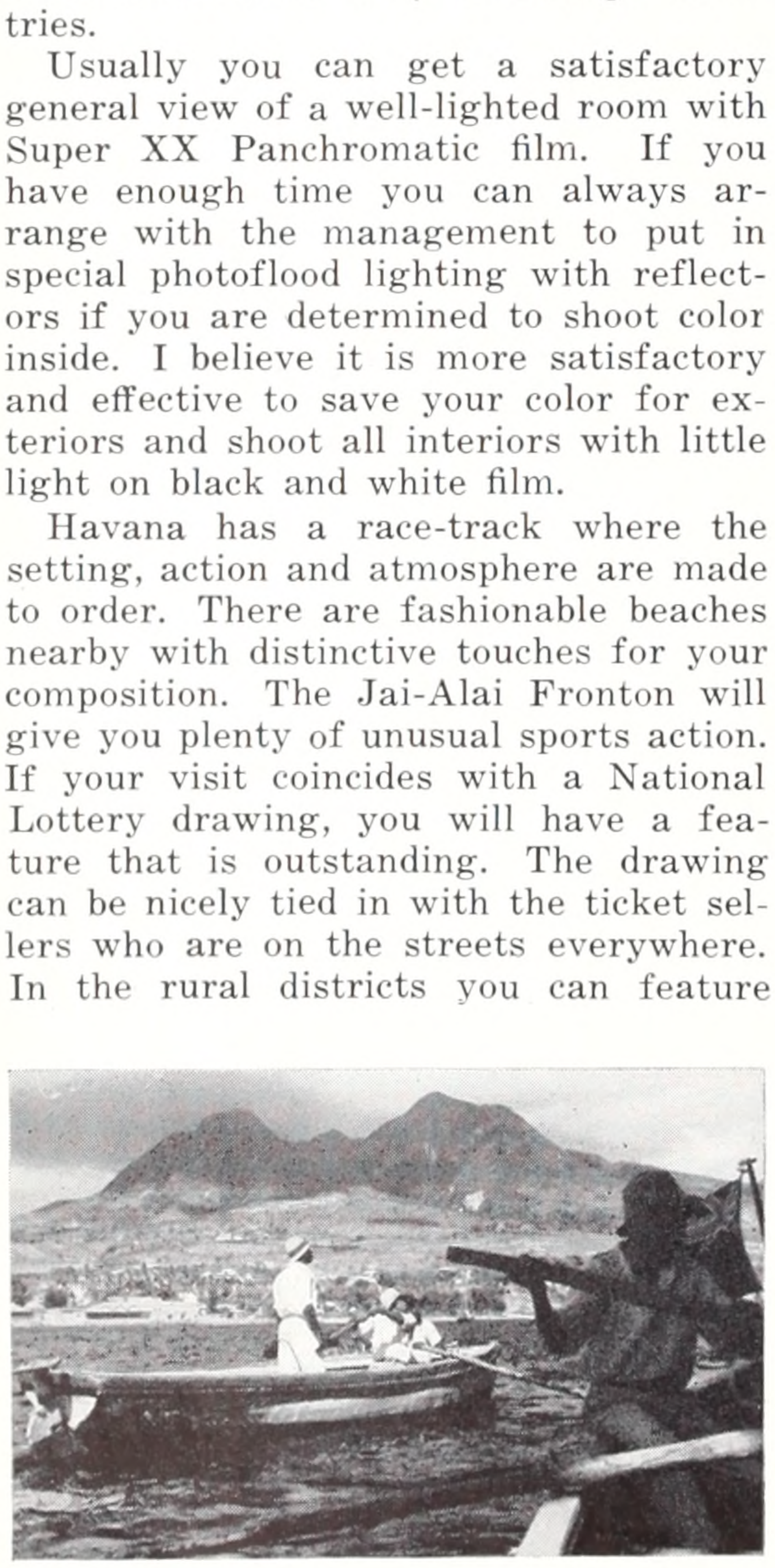
Virgin Island Cowboy.

ists, is surprisingly long and varied. Good roads will carry you from one end to the other and if you have the courage to ride the busses you can cover a lot of miles for a few dollars. In Havana, the government buildings are certainly worthwhile, and the Prado is a feature to cover with high shots and intimate close-ups. There is more nightlife and sports activities in Havana than in any other city in the whole group of islands, so that is the place to get these features.

Night clubs with typical Cuban atmosphere abound, while gambling casinos and bars are easy to find and shoot. With your pockets full of photofloods you can easily get the essential close-ups by substituting one of your bulbs for the regulation house bulb. Be sure that the voltage is correct though, and that your base will fit the house sockets since electrical fixtures do vary in foreign countries.

Usually you can get a satisfactory general view of a well-lighted room with Super XX Panchromatic film. If you have enough time you can always arrange with the management to put in special photoflood lighting with reflectors if you are determined to shoot color inside. I believe it is more satisfactory and effective to save your color for exteriors and shoot all interiors with little light on black and white film.

Havana has a race-track where the setting, action and atmosphere are made to order. There are fashionable beaches nearby with distinctive touches for your composition. The Jai-Alai Fronton will give you plenty of unusual sports action. If your visit coincides with a National Lottery drawing, you will have a feature that is outstanding. The drawing can be nicely tied in with the ticket sellers who are on the streets everywhere. In the rural districts you can feature the majestic Royal Palm in sugar cane harvest scenes. Cattle-raising is a big industry in the southwest and manganese mining is important.



Shore Boat.

Just off the southwestern coast of Cuba are two islands worth side trips. The Isle of Pines is a quiet resort spot and has on it the Model Penitentiary which is most unusual in its architecture and management. Grand Cayman, which is British, is a small primitive island where the natives are famous as boat builders and where the green-back turtle industry centers.

East of Cuba is Haiti, surely the most colorful of all in primitive aspects. At Jacmel, stevedores make a ritual of loading the coffee into boats. About twenty men, each carrying a hundred-pound sack on his shoulder, are led from the warehouse by a crude fife and drum corps playing primitive tunes. The stevedores chant while they work.

Around Port au Prince, woodworkers use saws and lathes hand-powered and fashioned in a Rube Goldberg style. In the morning there is a constant stream of women and donkeys coming to town with loads on their heads and backs and often you will see a woman on top of the load the donkey is carrying. Along country roads there are picturesque religious shrines. In the villages crude ox-powered presses grind sugar-cane and men whip-saw huge logs by hand.

Shots of Christophe's Citadel inside and out will reward you for the hard trip by donkey from the base of the mountain.

Adjoining Haiti is the Republic of Santo Domingo. Unless you have time for an expedition into the interior, the principal interest here lies in the capital city. There are some ancient buildings and the church where the Santo Dominicians claim Christopher Columbus is buried.

East across the channel, you come to Puerto Rico with its capital and center of activity in San Juan. Morro Castle which guards the harbor entrance is photogenic from all angles, and on a day when the sea is rough you can get some spectacular waves breaking on this buttress. Inside the fortress is a golf-course which you would readily recognize as an unusual feature.

Just off the coast, a tiny isle is being used for the scientific study of monkeys, which are allowed the freedom of the island. A special permission will be needed to visit this island but it really is worthwhile if you can arrange it.

The countryside of Puerto Rico is scenically beautiful but lacks any outstanding features worth concentrating on. There are large coconut plantations on the southwestern coast where you can get effective harvest scenes as the coconuts are gathered, husked and the meat removed to be dried for copra. Sugar plantations are on a large scale with modern methods if you are interested in that aspect. In Ponce, on the south-central coast, there's a volunteer fire department which, if you can arrange to get it in action, is worth considerable footage.

Native 'Bobby', Barbados.

Nearly everyone takes a small steamer, The Catherine, which runs from San Juan to St. Thomas in the Virgin Group. But the Pan American Airways flies the same route and there is also a small motor launch that makes a night crossing from the eastern tip of Puerto Rico to Charlotte Amalie, St. Thomas.

St. Thomas is truly different. The Danes left their mark with typical buildings in Charlotte Amalie, the capital, and on the countryside. By all means feature the enclosed gardens, iron-grilled balconies, statues above doorways, and winding stairways. The native handcraft co-operative is worth a visit and if you inquire, the management will tell you where to find some of the natives at work on delicate pieces. Perfume shops and Danish silverware stores are also tourist attractions if you want to include the wife's shopping in your film.

Blue Beard and Black Beard, notorious pirates in the days when wild adventure rode the Caribbean, both built towers on St. Thomas. They are still standing; one is in the backyard of a private home and is used as a water tower, while the other has been incorporated into the new and elaborate Blue Beard's Hotel. They are both good for a shot.

St. Thomas is different in structure from most of the other islands. It is almost entirely mountainous except for a few narrow strips along the coast. Although pretty to look at the country does not shape up into worthwhile picture composition. There is an unusual agricultural endeavor at the TuTu Ranch where about one thousand milk cows are being raised for export to neighboring islands. The cowboys are negroes who wear ten-gallon hats and rubber boots!

On a narrow neck of land on the out-

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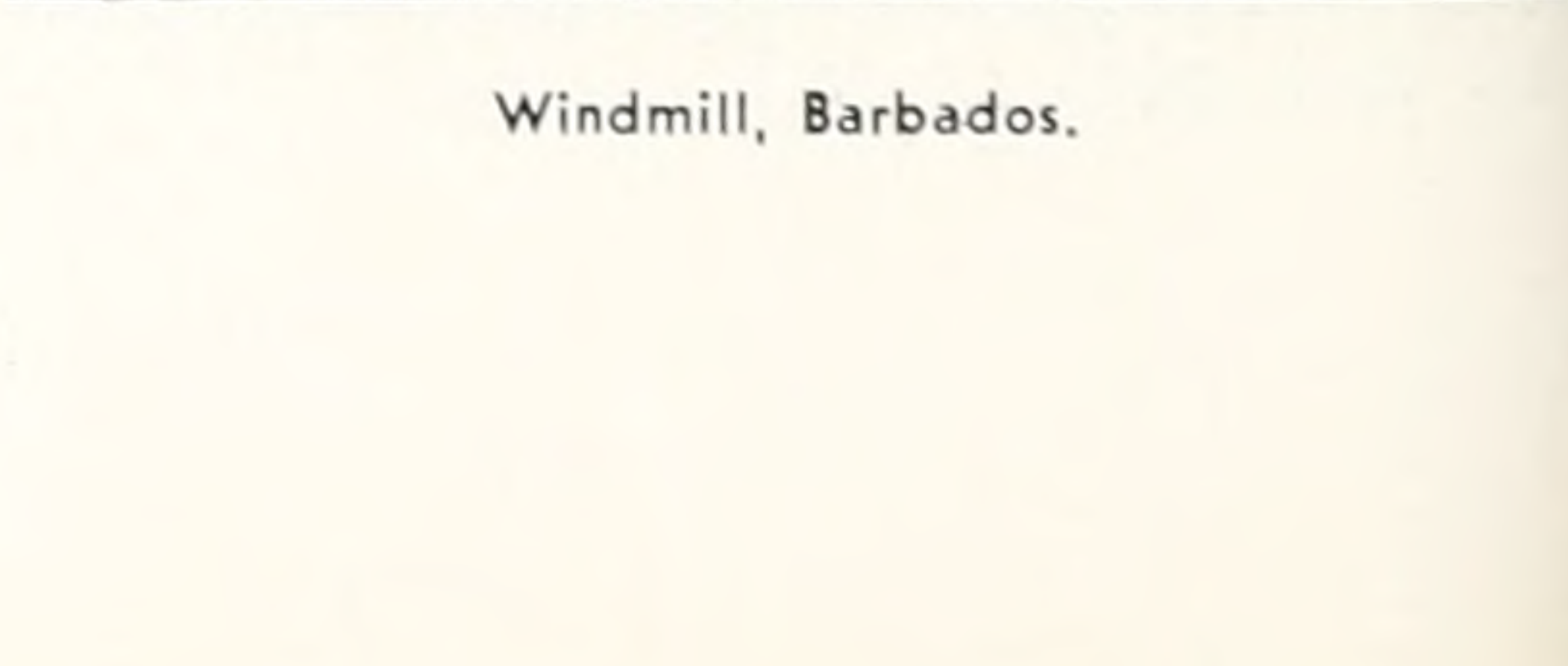

Windmill, Barbados.

Photographed on Agfa Film.

Scenario for "Teen-Age" Troupers

By Ronald Sinclair

ONE of the real problems of movie-making is that of finding stories in which "teen-age" youngsters can appear believably, and yet at the same time be doing something with enough dramatic interest to make an entertaining film. This month we have the privilege of presenting such a scenario, written by sixteen-year-old film-star Ronald Sinclair, who made it into a successful 8mm. talkie (see AMERICAN CINEMATOGRAPHER, September, 1940, P. 419). We present Ronnie's script in its original form, including dialog. For those who may wish to film this story as a silent film, we suggest that the speeches printed in **heavy type** can be used as titles.—*The Editor.*

MAIN TITLE:
IT HAPPENED ONE DAY

CREDIT TITLE
The Cast
Bob Sheffield
Nan Young
Billy Young
Art Simmons

Scene 1: Long-shot. Bob and Nan are walking home from school, books under their arms, approaching the camera along a quiet street.

Scene 1-a: Medium trucking-shot. Bob takes Nan's books. (For silent picture, after this action break the scene into individual close-ups, to intercut with spoken titles.)

Bob: **Who was that new kid in school today?**

Nan: **Oh that was Art Simmons. Nice, isn't he?**

Bob: Yeah, I guess so. How'd you make out in the test today?

Nan: Fairly good.

Scene 2: Long-shot. A flashy-looking car drives up.

Scene 3: Close-up of Art Simmons in car. He turns and speaks.

Art: Hey Nan! Wanta ride home with me?

Scene 4: Close two-shot, Bob and Nan.

Nan (turning to Bob): It's Art. (Calling offstage): Okay. (Turning again): Do you mind, Bob?

Bob: I guess not, if you want to, Nan.

Nan: Oh, thanks a lot, Bob.

Scene 5: Full two-shot. Nan takes her books and races over to the car, gets in and drives off with Art. The camera pans with her.

Nan: Good-bye.

Scene 6: Close-up of Bob. He follows the car with his eyes. FADE OUT.

Scene 7: Long-shot. Art drives up to Nan's house. As she gets out of car, her younger brother, Billy, races up to her.

Scene 8: Three-shot, by car.

Nan: **This is Billy, Art. He's my brother.**

Art: Hi ya, Kid.

Billy: Hello. Is this your car?

Art: You betcha it is.

Scene 9: Close two-shot, Art and Nan.

Art: **How about taking in a show with me tonight?**

Nan: Well—er—all right.

Art: I'll pick you up at seven. So long.

Nan: Good-bye, Art. I'll see you then.

FADE OUT.

TITLE:
TWO WEEKS LATER

Scene 10: FADE IN. Interior medium-shot of Bob, reading.

Scene 11: Medium close-up of Bob. Slowly he raises his head to right of camera. DOUBLE EXPOSE (fading in and out) "flashes" of Nan and Art playing tennis, swimming, going to show, skating, driving, etc.

Scene 12: Medium-shot. Bob suddenly snaps out of his mood. A decisive gleam comes into his eye. He gets up and walks out of scene. FADE OUT.

Scene 13: FADE IN. Exterior long-shot. Bob walks decisively up to Art's house.

Scene 14: Close-up of Bob's knuckles knocking on door, or hand ringing doorbell.

Scene 15: Tight long-shot of door. Bob, back to camera, in foreground. Art comes to the door.

Art: Well, hello Bob. Come in.

Scene 16: Close medium-shot of Bob.

Bob: I'd rather not, thanks.

Scene 17: Close-up of Bob, obviously angry.

Bob: **You think you're pretty smart, taking Nan out, don't you?**

Scene 18: Close-up of Art. A sneer comes over his face.

Art: **Can I help it if she likes me more than you?**

Scene 19: Close-up of Bob, infuriated.

Bob: Why for two cents I'd—

Scene 20: Medium-shot of Art, clenching his fists.

Art: I'd like to see you try it!

Scene 21: Full two-shot. Bob jumps

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Choosing and USING YOUR PROJECTOR

By JAMES A. SHERLOCK

Vice President
Australian Amateur
Cine Society

TO deal fully with this subject a book of no small proportions would be required, but the more important aspects of cine projection are examined in this series of articles.

The difficulties which beset the designer of a cine projector are many, not the least being the price which we, as buyers, are prepared to pay. For this reason manufacturers are compelled to delete refinements from some models that they may be sold at a price their customers are willing to pay.

When comparing projectors there are many points to observe, some of which are:

1. The quality of projection and steadiness of screened picture.
2. Simplicity and quietness of operation.
3. Finish, durability and rigidity of framework and mechanism.
4. The optical system.
5. The efficiency of service available locally.
6. Selection of various lamps, shutter-speeds and lenses for use in different sized rooms.
7. Power rewind.
8. Oiling system.
9. Variable projection - speeds (e.g. sound and silent).
10. Declutching movement for showing stills.
11. Reverse movement.
12. Controlled voltage.
13. Ammeter.
14. Pilot light.
15. Largest reel of film which can be projected.
16. Belt or gear transmission.
17. Sound projectors should be free from sound distortion.
18. Protection of film from mutilation.

Optical Systems

There are two different designs used for optical systems of cine projectors —(1) that using "direct lighting," where the reflector, lamp, condenser, shutter, film and lens are in perfect alignment, and (2) that which uses "reflected light" from a lamp placed at right angles to the path of the film. In the latter case a mirror or prism is used to change the path of the beam of light. This method unfortunately causes a light-loss of approximately 10%. Medium-priced projectors are so designed, and have merits which are liable to be over-looked.

For example, projection lamps generate a good deal of heat, and machines designed with the lamphouse on the opposite side of the framework to that used by the path of the film do not heat the projection gate and the film to such an extent as those machines using direct illumination. This is an advantage when the machine is being constantly used by lecturers for still-picture projection. Another point in favor of these projectors is that they can be designed in a more convenient size, with both the feeder and take-up reels away from the heat of the lamphouse, and the reel-spindles placed in a position which gives the projector a very low center of gravity.

Lamps

The majority of cine projection lamps are of the close filament gas-filled type. The bases of lamps for Kodascopes and several other projectors are of the bayonet type, which locks the lamp with the filament in its correct position. Bell and Howell projectors use a special custom-built socket, acting on a similar principle.

A projection lamp emits a blinding light radiating in all directions, and the projection designer's problem is to direct as much of this light as possible through the narrow opening of the projector gate where the film lies. When it is mentioned that the size of the 16mm. projector gate is only approximately 9½mm. by 7¼mm. it will be realized that if a path of light is to be condensed into this small space, only a small part of the total light radiated from the projection lamp is used. The greater portion of the light from the filament is wasted in and around the lamphouse.

Lamp Wattage

Designers of projectors — especially those made in Europe — aim to keep the voltage of projection lamps as low as is practical, because increased lamp voltage necessitates increased size of the lamp filament.

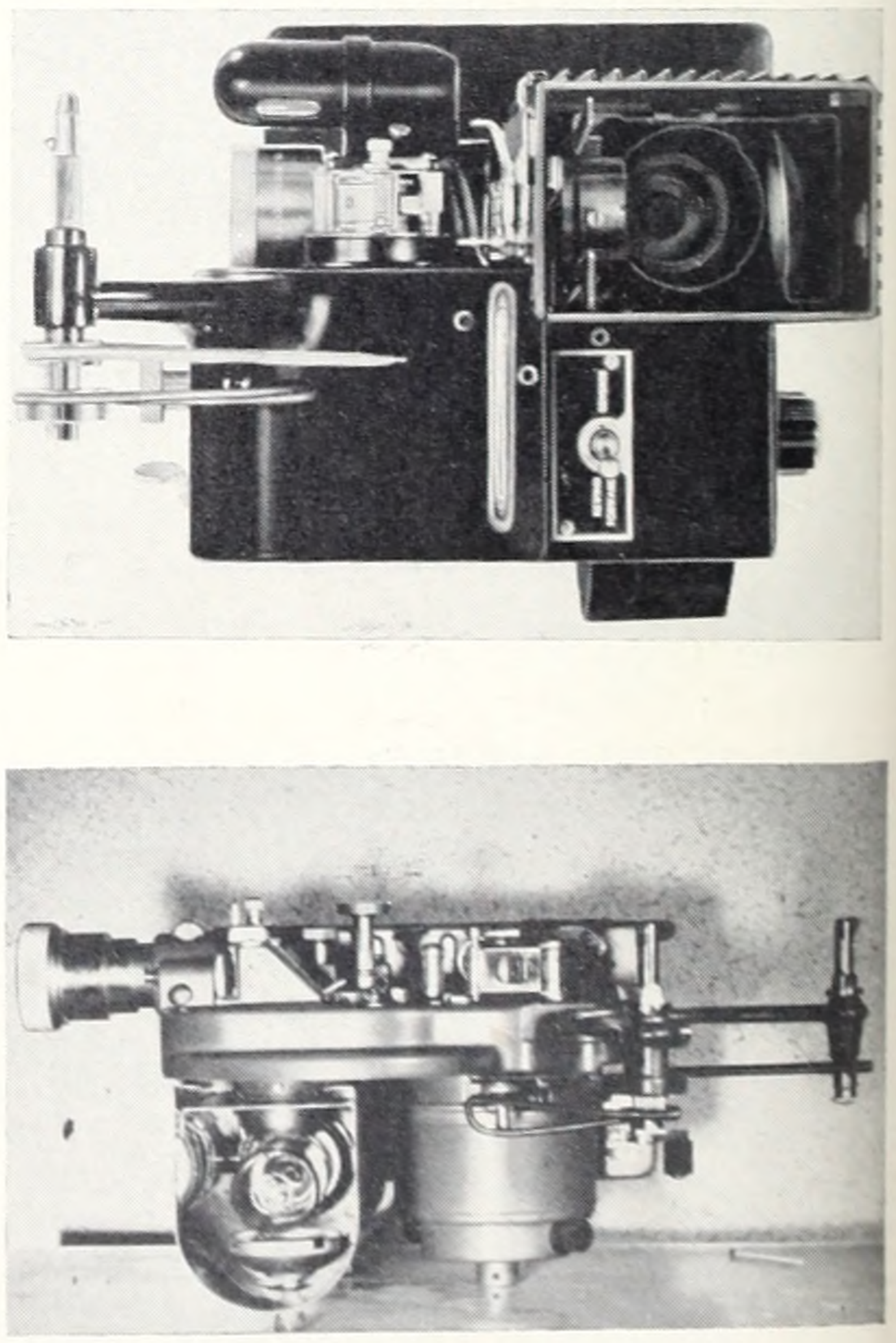
For example: A projection lamp of 250 watts working on 50 volts has a filament approximately half the length of one of the same wattage working on 100 volts. Because of this fact the 50-volt lamp produces a more concentrated light and therefore shows a remarkably bright picture.

In fact it is not uncommon to find a projector fitted with a lamp of 250 watts, working on 50 volts, producing a more brilliant picture than a projector fitted with a lamp of 750 watts, working on 110 volts. When a projector and lamp have been wired for, say, 110 volts and are being used on a local main of 240 volts it is necessary to use a resistance or transformer, either of which reduces the surplus current. This problem is seldom encountered in the U.S.A., where 110-volt current is almost universally available, but it is a serious consideration in other parts of the world.

Lamp Life

The life of projection lamps is much less than those used for ordinary lighting, and the higher the intensity of a projection lamp the less is its life; e.g., lamps below 100 watts last for 100 hours, while lamps rated at 500 watts or over last approximately 25 hours. If a projection lamp is overloaded (volts) by only 10%, its light is bluer and its life shortened. This is the principle by which the new "10-hour" lamps gain their added power. If it is under-run by 10%, it lasts longer than its normal life but tends to produce a yellow light. Sudden surges in current voltage which occur in some local mains are detrimental to the life of these lamps, and some manufacturers insert an ammeter in the circuit of their projectors which indicates the rate of flow of the current. This is a refinement which might easily be added to more machines.

The most common time for any filament lamp to collapse is the moment it is switched on; for this reason some projectors are fitted with a rheostat to pro-



Projector optical systems. Above, "direct illumination" (Kodascope Model G); below, "indirect lighting" (a popular-price Bolex model, not marketed in U.S.A.).

tect the filament, and the light cannot be switched on unless the lamp is receiving only a small fraction of the current. After the lamp is lighted the rheostat is turned on full. This refinement could well be adopted by more manufacturers, as it lengthens the life of a lamp.

From Lamp to Screen

At the back of the lamp is a concave reflector, so placed to reflect the filament of a lamp in an almost solid "wall" of light to the condenser lens. The condenser lens collects this light from as wide an angle as possible and images the filament and its reflected image through the gate, so that the beam comes to a focus point as a cone of light at or near the point where it enters the projection lens. By this means the light evenly illuminates the picture before it is thrown into the lens.

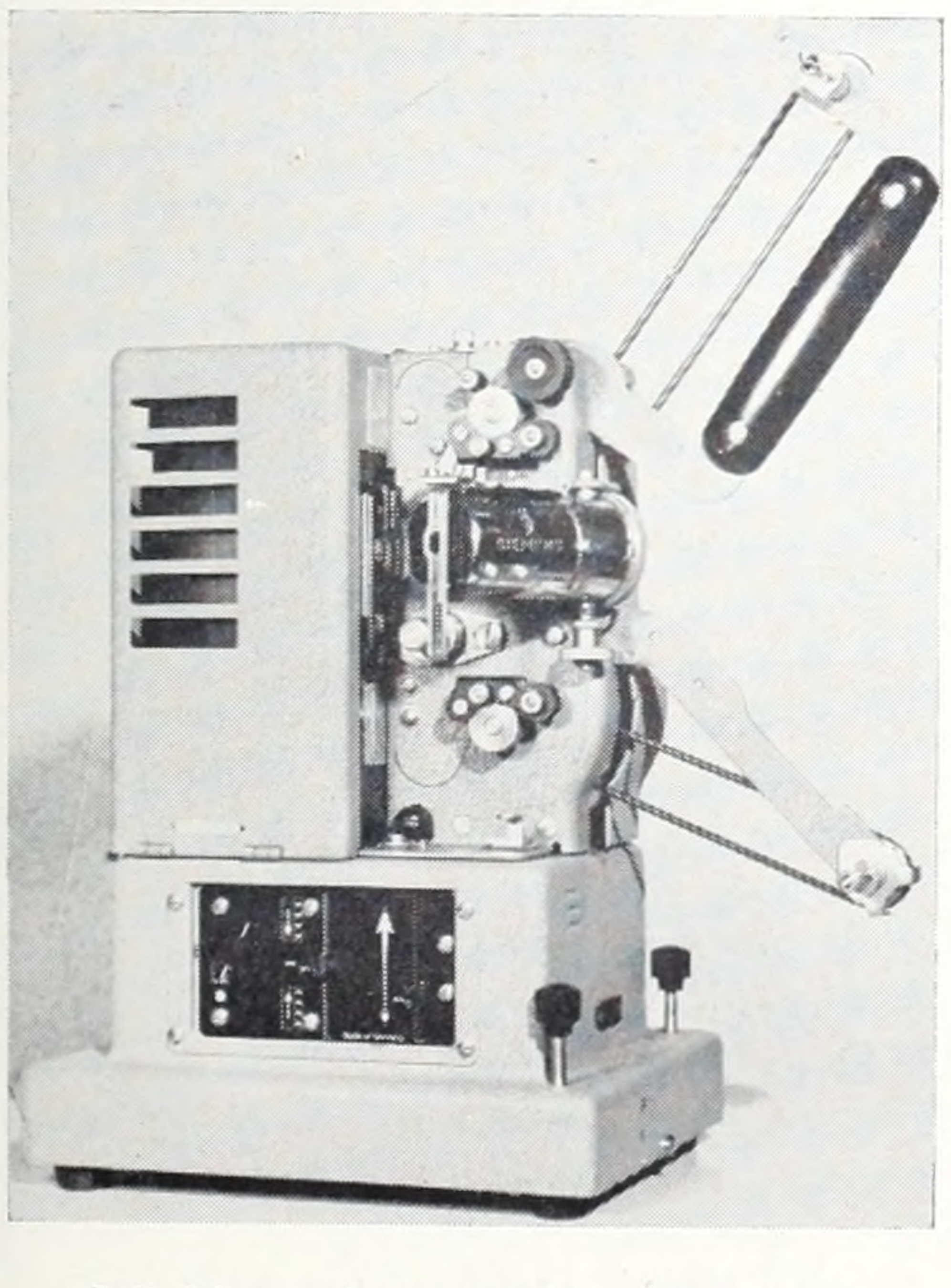
Lamp adjustment, whereby the individual coil location in the filament can be correctly centered in the reflector, is in some cases made possible by shifting the lamp socket holder, or in other cases, as with the Bell & Howell projectors, the concave mirror is adjustable. Either method requires the removal of the projection lens and the film. Adjustments are made until it is possible to see a clear outline of the filaments of the lamp on a screen. The best conditions result when the filaments appear sharp and clear.

The following table shows the effect of underloading and overloading a lamp of 110 volts rated for 50 hours of normal use:

TABLE I

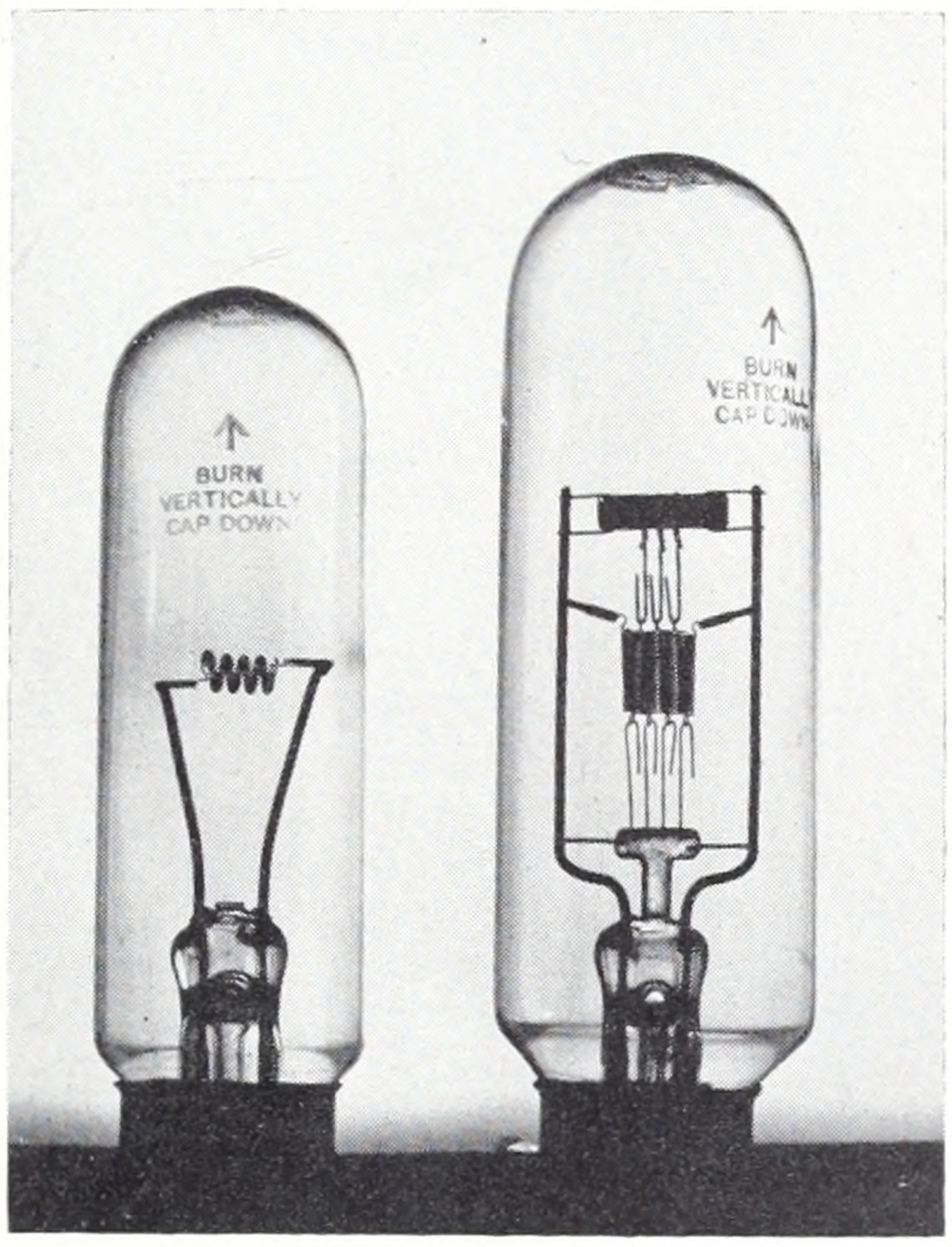
	Transmits Volts	(Life approximate) light	hours
Lamp underloaded by	9	75%	153
Lamp underloaded by	7	80%	118
Lamp underloaded by	5	85%	82
Lamp underloaded by	3	91%	71
Lamp underloaded by	1	97%	56
Lamps with normal rating of	110	100%	50
Lamp overloaded by	1	103%	45
Lamp overloaded by	3	109%	35
Lamp overloaded by	5	116%	28
Lamp overloaded by	10	134%	16

Between the condenser and lens is placed a shutter to mask the intermittent movement of the film as it changes from each individual frame to the next frame. To avoid the appearance of flicker as moving pictures are being screened to an audience, films should be projected with such rapidity that the sensation produced by one frame or picture remains on the retina until the next frame appears. This is known as "persistence of vision." It has been found that the eye is not aware of any interruption between moving pictures when the number of alternations is 48 per second. The running speed of silent film is 16 frames per second, therefore each single frame should be uncovered and covered three times before the next frame appears.



Belt-driven take-up (Siemens, Germany).

That is the reason why three-bladed shutters are popular with some manufacturers of projectors. Other manufacturers supply a single-bladed shutter geared to revolve three times before each frame when silent pictures are being projected at a speed of 16 frames per second, and twice only when sound pictures are shown.



Note more concentrated filament of 50-volt, 250-watt lamp on left as compared to that of 115-volt lamp of same wattage, right.

Sometimes two-bladed shutters are synchronized to move past the film three times per frame. They can be used when silent films are being screened at their normal speed to uncover and cover each frame of the film twice only, thereby increasing the light-output of the projector. This, of course, produces flicker which can be noticed by people seated close to the screen, but the flicker is not as pronounced beyond 30 feet from the screen.

The main use for two-bladed shutters, or single-bladed shutters which uncover and cover each single frame but once, is in sound film, which is projected at the rate of 24 frames per second. As previously mentioned, the eye is unable to detect flicker when the number of alternations is 48 per second, therefore a shutter passing each frame of a sound film only twice is sufficient to prevent the appearance of flicker. This two-bladed shutter system has a great advantage over the three-bladed system for long throws of silent films in that it permits 33⅓% more light to pass through the film.

A very interesting shutter design is in the tri-film sound-and-silent Bolex, which is fitted with a convertible shutter which for normal use may be used as an extremely flicker-free four-bladed shutter, and where an extremely large picture is desired, converted to a two-bladed shutter, permitting a considerable increase in screen brightness.

To protect the film from heat as much as possible, most modern projectors have the shutter placed between the film-gate and the lamphouse.

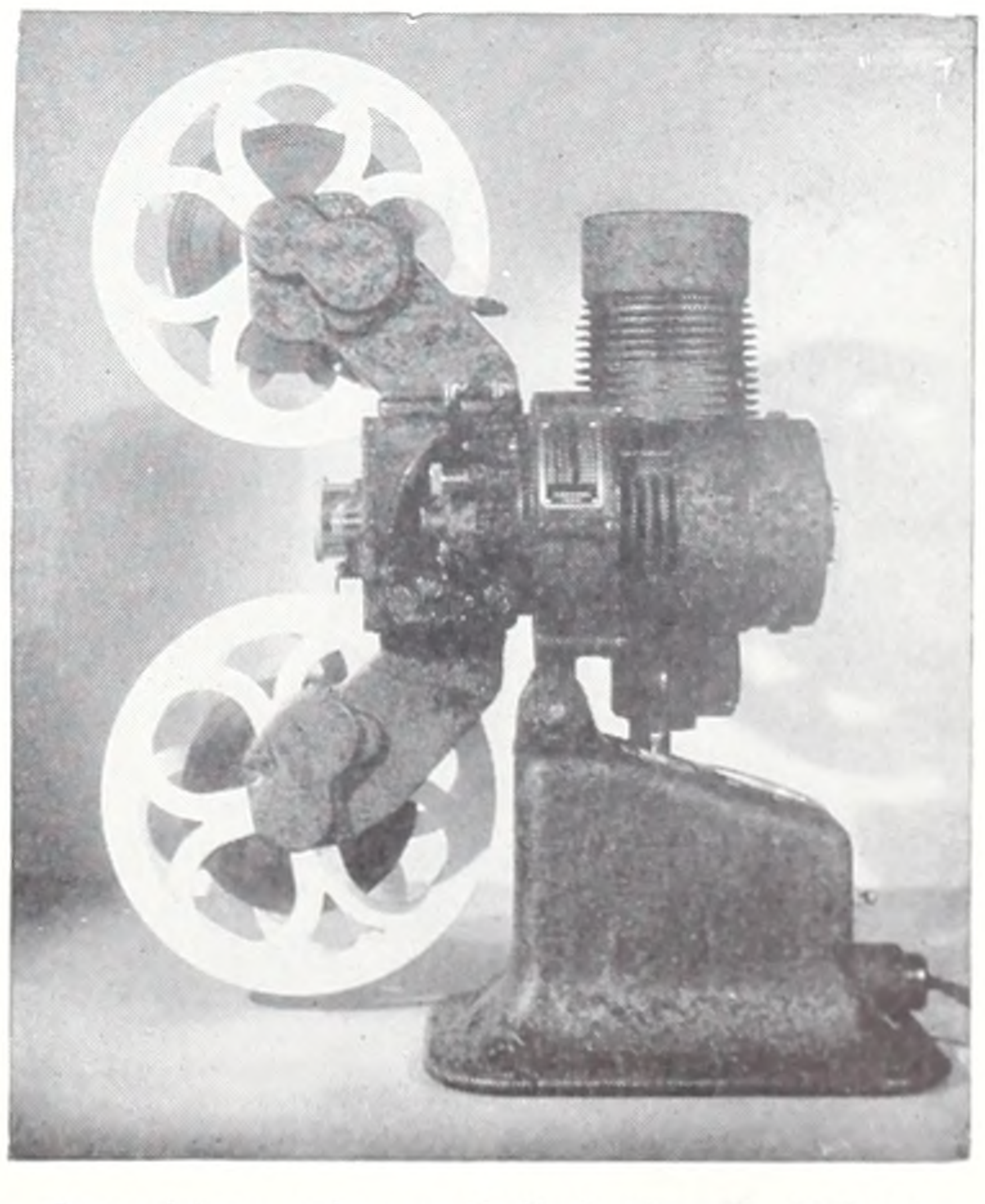
Intermittent Mechanism

The most popular type of mechanism used for intermittent frame changing is the cam-and-claw movement. By this system either one or two claws engage the perforations by penetrating them. The film is quickly and accurately pulled down one picture-space while the shutter covers the light. The claws then disengage and return by a cam movement to repeat the action.

Two other intermittent movements are sometimes used on projectors:

1. The "beater-and-rocker" movement, whereby the film is pulled downward past the aperture, one frame at a

(Continued on Page 91)



Gear-driven take-up (Bell & Howell, U.S.A.).

AMONG THE MOVIE CLUBS

CALLING CLUB SECRETARIES!

This department of THE AMERICAN CINEMATOGRAPHER is *your* department. We feel that there is a great deal to be gained all around by making these reports of club activities available to other clubs and to independent cinefilmers all over the country. To that end, we ask all you club secretaries to consider yourselves special reporters for THE AMERICAN CINEMATOGRAPHER with the assignment to "cover" the activities and meetings of your club. Send us those reports as quickly as possible after the event has happened—and make your report accurate and prompt. Wherever possible, we'd appreciate getting reports of meetings that have actually happened, rather than of those that are scheduled to happen in the future, so that none of us will be embarrassed by reading that something is going to happen at such-and-such a meeting, only to find later that some switch in schedule made the actual meeting very different. And please — remember that February is a short month, and printers and editors wait for no man—so get your reports in for the next issue by not later than February 20th.

The Editor.

Frame enlargement from special Kodachrome title-leader made and presented to members of the Tri-City Cinema Club (Rock Island and Moline, Ill., Davenport, Ia.) by President Dr. Albert Mueller.

St. Paul Studies Lighting, Color

Scheduled highlights for the January meeting of the St. Paul Amateur Movie Makers Club included a demonstration of interior lighting by Robert Green of the Wonderlite Co., and a preview of the Great Northern Railway's 1941 Kodachrome sound-films of Glacier National Park, made by Honorary Member William S. Yale, the Great Northern's Chief Cinematographer. Also on the program was a film made by lady member Dona Miller on her trip to South America.

"The Reel Stuff," the Club's lively bulletin, announced the purchase of the second piece of Club-owned equipment—a Da-Lite screen. The bulletin further stated that the screen was acquired in a trade for the Club's Besbee titler—yet the Club still had the titler. Yes, we'd like to know the answer, too!

Tri-City Sees Movie Errors

The Tri-City Cinema Club uniting the moviemakers of Davenport, Iowa, and Rock Island and Moline, Illinois, highlighted its January meeting with the projection of two films on "Common Movie Errors." One was a 50-foot 8mm. black-and-white reel, filmed by member Tom Griberg of Moline, which dealt with such faults as underexposure, overexposure, poor focus, poor framing, tilted horizons, inverted camera, finger before lens, camera-jiggle, fast pans, "garden-hose technique," shooting from moving car, short scenes, walking with camera, subject staring at camera, and no motion. The other was the well-known 400-foot 16mm. reel produced by the Harmon Foundation, of New York.

As a reward for enduring this concentrated blitzkrieg of movie horrors, the program finished with a 1200-foot 16mm. Kodachrome film, "America's Northern Wonderlands," the filmic record of an Alaskan Cruise filmed by member Birger Swenson.

A note relative to the Club's December meeting, received too late for publication last month, revealed that President Dr. Albert Mueller established a precedent by making special Club film-leaders in 16mm. and 8mm. Kodachrome and presenting them to all members present.

New Governors for L. A. 8mm.

At the January meeting of the Los Angeles 8mm. Club two vacancies on the Board of Governors were filled with the election of Past-President Dr. F. Robert Loscher and John E. Walter. Several notable guests were present, among them Mr. and Mrs. Fred Ells, internationally famed cineamateurs, late of Yokohama; William Hight and Jacques Shandler, President and Secretary of the Los Angeles Cinema Club, and Jack O'Brien, of Alhambra's La Casa Movie Club.

Screen features included showing of a film sent by ex-president Bill Wade, lately transferred to Denver, and prize films from the Club's 1940 Contest, including "Compounding A Prescription," by B. M. Bevans; "Penitence," by A. B. Callow; "Pedro's Bath," by Prexy A. J. Zeman; "Downfall of Daughter," by Charles Moore; "Trip to Catalina," by Foster K. Sampson; "Desert Scenes," by Irwin Dietze; "Blasto," by Paul Cramer; "Reaping the Raindrops," by L. B. Reed; "Seeing Southern California," by John Elliott; "Riddle of Sawtooth Ridge," by Leo Caloia; and "Two Modern Topsies," a sound-synchronized Kodachrome minstrel-show by Adolf Apel.

Cleveland Elects

New officers have been elected to the board of Cleveland Amateur Cinematographers for the year 1941, and these were ceremoniously inducted into office at the club's annual banquet at Fischer-Rohr's Steak House on the evening of January 8th. With the advent of the fourth year of the group the new President, Willard J. DeWitt, announced a well-organized program of activities for the club, which will include four contests. The first of these is already in progress. It is called a "good shots contest" and entries will be comprised of an assemblage of outstanding shots taken recently by the members. Prize awards will be given based on exposure, composition, pictorial interest, and general cinematic technique.

Other new officers, in addition to President DeWitt, are J. J. Worz, Secretary, J. Leroy Collins and Charles Ciasca, Vice Pres. and John Chodera, Treas.

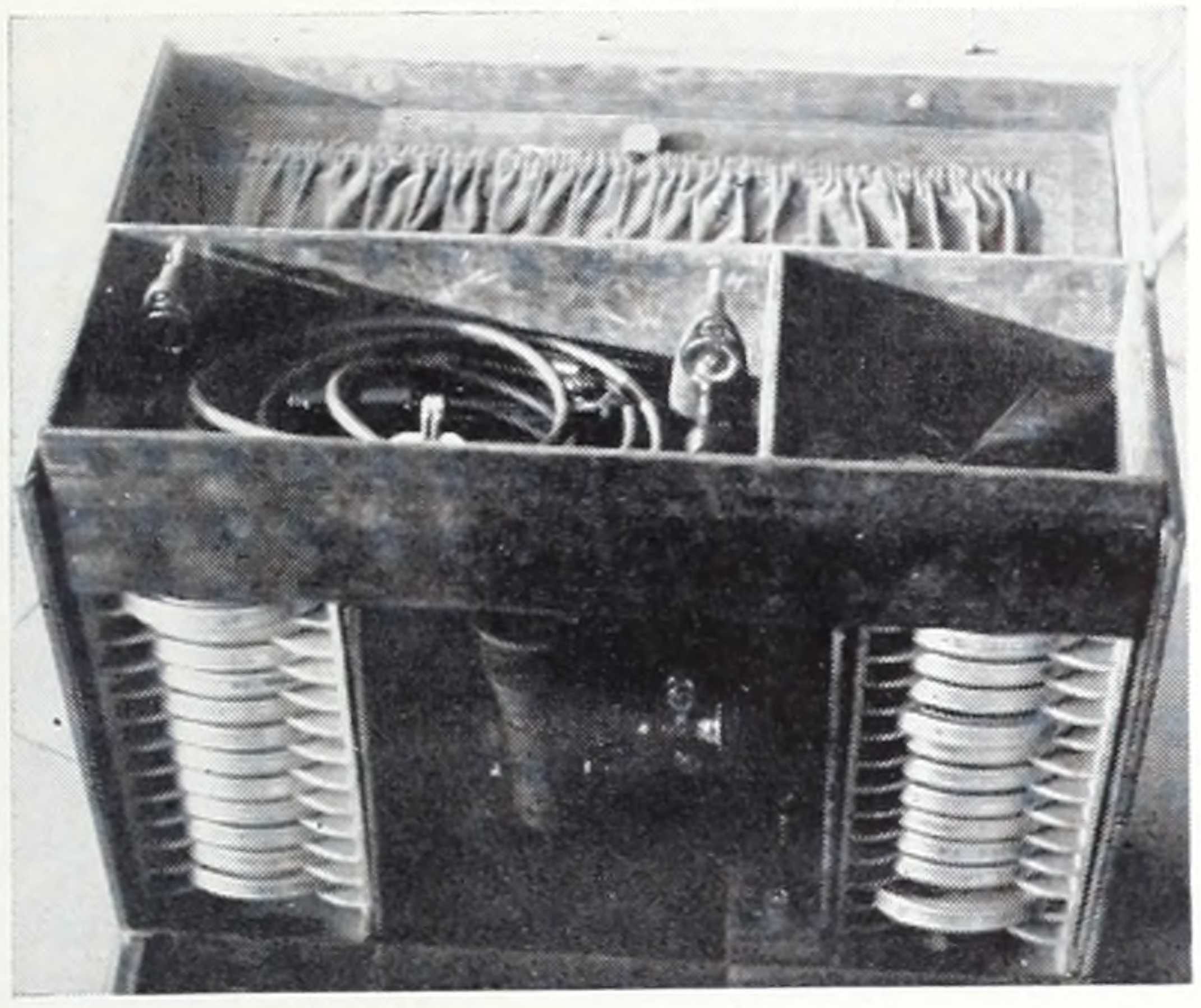
The retiring President, Dick Batchel-

(Continued on Page 91)

THE IDEA EXCHANGE

THE IDEA EXCHANGE is just what the name implies—the place where 16mm. and 8mm. cinefilmers can swap moviemaking ideas with the other fellow. The little improvised tricks you used to solve one of your cinemaking problems may be just the answer to something that's perplexing a fellow filmer—and one of his ideas may solve a problem for you.

To help out this exchange, THE AMERICAN CINEMATOGRAPHER invites you to send in descriptions of gadgets, tricks, shortcuts and methods you have used in any phase of home movie work—shooting, editing, titling, projecting, processing, and the like. If possible, send along a photograph or sketch to help make your description more clear to the other fellow. For every idea published in THE IDEA EXCHANGE, we'll give you two projection-reels and cans. Really unusual ideas will receive higher awards. When sending in your idea, let us know whether you shoot 8mm. or 16mm. to facilitate sending you the right equipment.



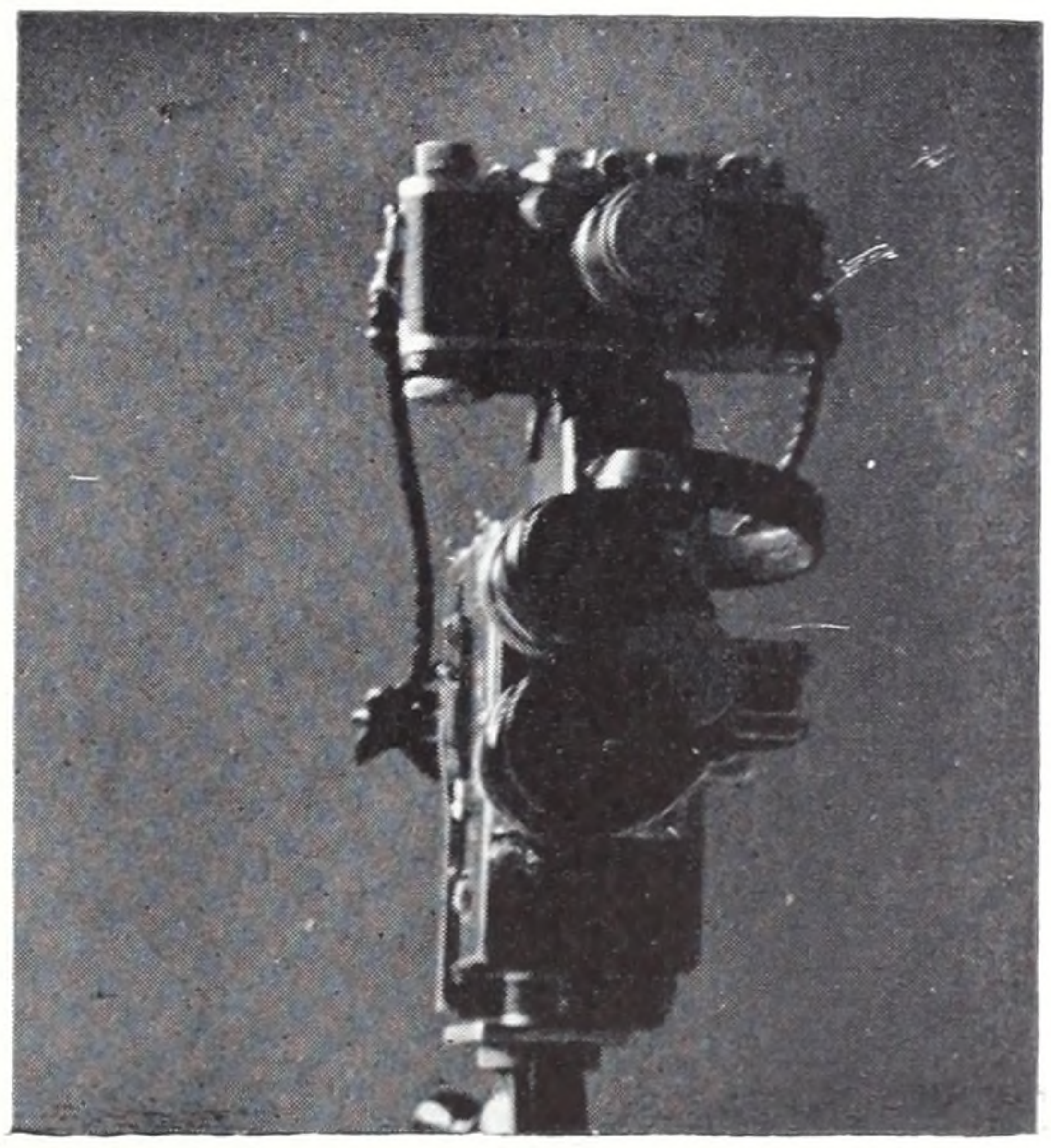
Projector and Film Case

Anyone who travels extensively, as I do, will surely have had plenty of experience with the inconveniences of trying to keep the cases carrying your 16mm. or 8mm. projector and your completed films together so that even on shipboard or in a strange town you can put on a show for your friends at a moment's notice. After having my quota of trouble with this problem, and exhausting my vocabulary on porters, stewards and baggage-men who insisted on putting one case or the other where I couldn't find it, I solved my problem by having a special case built to carry projector, films, and everything else needed for an evening's film-showing except the screen, which of course has its own case.

The case was built around my Filmo model JS 16mm. projector and the 400-foot cans holding my films. It is about the size and shape of a small suitcase, which, when closed, it resembles. Both the top and one entire side are hinged to swing fully open, so the projector and film can be gotten out easily. The lower part of the case's interior is divided into three sections by vertical partitions. The center-section holds the projector, and is shaped to hold it firmly in place. The two side sections accommodate special, removable shelf-boxes, each of which holds twelve 400-ft. reels, any one of which can be removed from its compartment without disturbing the other reels. A removable tray at the top of the case has compartments which accommodate the projector-cable, rewinds, splicer and (demounted) the magnifying unit of a Filmo viewer. The projector and film can be removed from their places without having to lift this tray out of the way.

I had the outside of my case covered with heavy leather, and the inside lined with plush or velvet, like any fine camera-case. The necessary clasps, a handle and a "Sesamee" combination-lock were fitted. Any trunkmaker can easily build a case like this to fit any projector—and believe me, it's a great advantage to be able to carry your projector, splicer, screen and 24 reels of film in two small cases!

TOM FAY.

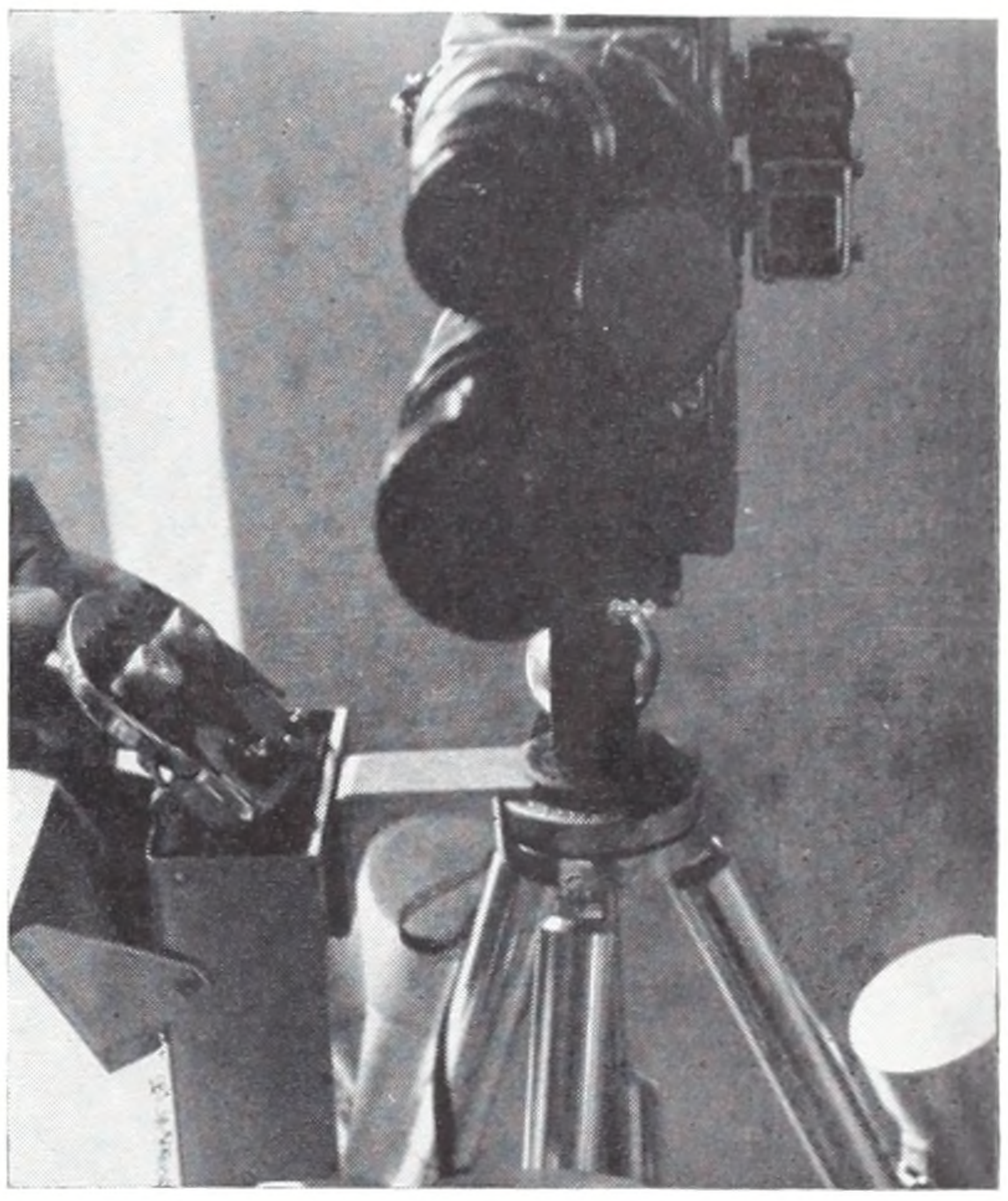


Duplex Camera-mount

Frequently I like to have my Leica on hand to shoot still pictures along with my movies. To make this easier, I had a special bracket put on top of my 16mm. Bolex camera as a permanent fitting. The bottom of this is curved to fit the top of the cine-camera. The top is flat, to make a firm base for whatever other camera I may want to mount there. At one side, so it can be operated easily, is a standard tripod-screw, by which the upper camera is screwed onto the mount.

This way I can "double up" in my filming in almost any way I like. I can mount the Leica atop the Bolex, and shoot stills as I go; or—since I shoot both 16mm. and 8mm. movies—I can very handily mount my little Filmo 8 above the bigger Bolex, and it's an easy matter to shoot 16mm. and 8mm. versions of the same picture at the same time. However—here's a tip: if you aim things through the finder of the lower camera, always be sure that camera has the narrowest lens-angle, so the parallax between the upper and lower positions won't throw your upper-camera shot off!

GAETANO FAILLACE.



Gadget and Lens Carriers

If you use fading-gadgets, extra lenses, and so on with your camera, you probably have had the same troubles I did with missing shots while I hurriedly went back to my camera-case to get out the lens, fader, or whatever I wanted—to say nothing of those unprintable moments when you look in the case and discover you've left your pet telephoto at home!

After that sort of thing had happened to me once too often, I decided I would take care of that problem once and for all. Luckily, just at that time I was having a special duralumin tripod built up for me, so I just had the shop do a few more little jobs with the metal—and there I was. The result is shown in the photo.

By means of an angle-bracket which fits between the tripod and the "True-ball" pan-and-tilt head, I suspended a little duralumin box at one side of the tripod. This is divided into two compartments. One of them is made to carry my "Bools" fading-device. The other holds the loose-leaf pocket notebook. I carry for recording scene data, information for titles, and the like. (After using this gadget, I can suggest that anyone who wishes to follow my example might do well to make this compartment a little bigger, so you can carry a pencil in the

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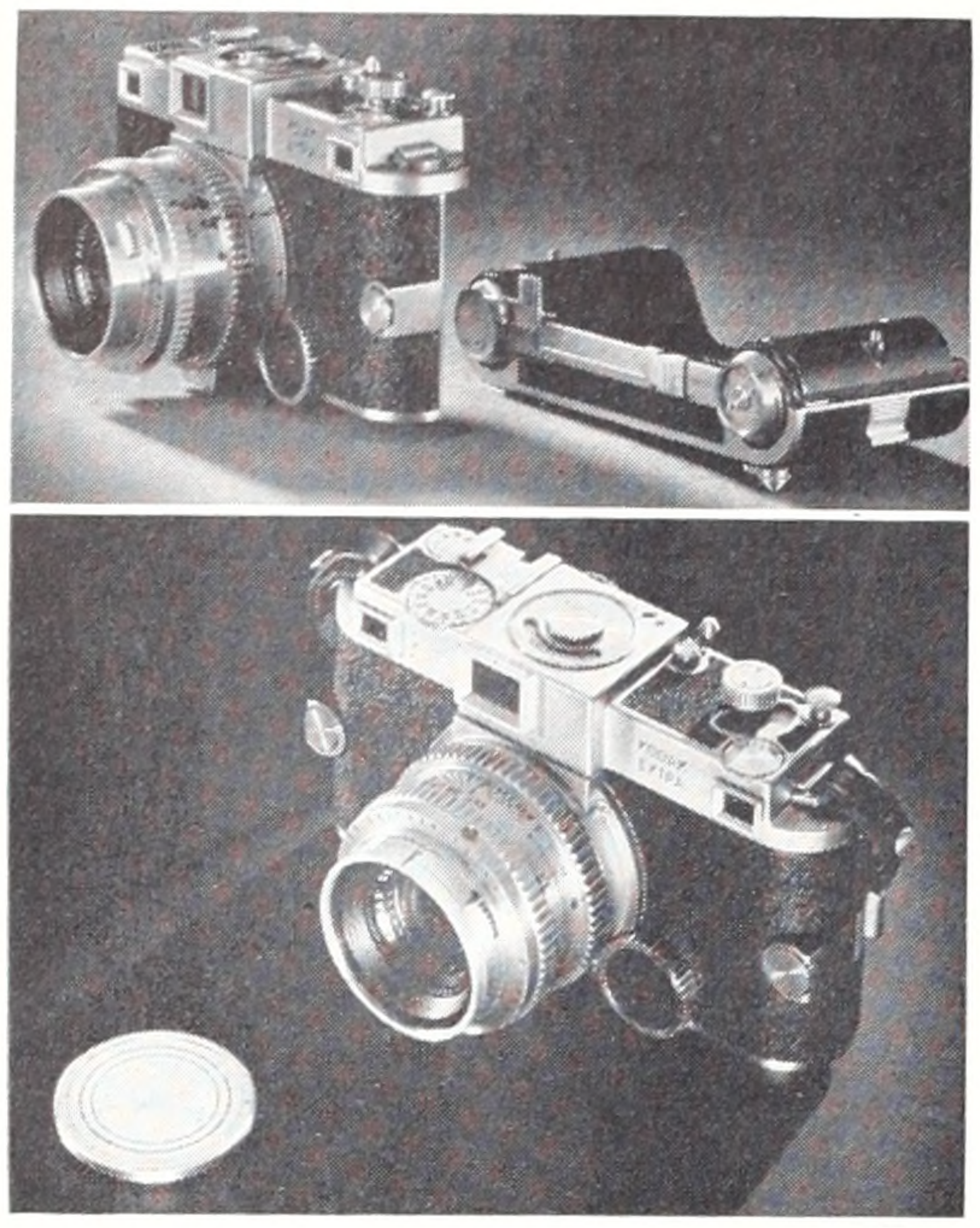
◆ ◆ ◆ . . . THE SHOWCASE . . . ◆ ◆ ◆



Magazine Minicam

The world's first magazine-type 35mm. miniature camera is announced this month by the Eastman Kodak Co., under the name Kodak Ektra. Standard 35mm. minicam rolls or film-cartridges are loaded into the special magazine back which may at any time be removed from the camera as a complete, light-tight unit, making it possible to interchange rapidly from black-and-white to Kodachrome or any other type of film without spoiling or wasting an inch of film. Other features of the Ektra include a choice of 6 interchangeable Kodak Ektar surface-coated lenses ranging from 35mm. to 153mm. in focal length; interlocked, long-base rangefinder; focal-plane shutter with speeds from 1 second to 1/1000; variable-power viewfinder which sets by a simple dial for lenses of focal lengths from 50mm. to 254mm., corrects automatically for parallax, and adjusts to suit individual vision; and an unusually convenient arrangement of all operating controls, scales, etc.

Basically, the new Kodak Ektra consists of three units—the camera-body, the specially-mounted Ektar lenses, and the magazine back. The camera-body houses the focal-plane shutter mechanism, viewfinder, range-finder, exposure-counter dial, and all other major operating controls except the film advance and rewind. Recesses at either end of the camera-body accommodate the spool-chambers of the magazine back, so that when back and body are placed together they combine into a single trim, neatly-designed unit with rounded ends that comfortably fit the user's hands.

Each magazine back has a manually-set exposure-count dial; an indicator to tell what kind of film is in the magazine; the mechanism for moving the film; a visual indicator to check on film movement; and a metal slide which automatically covers the film opening as the back is unlocked from the camera-body. Each magazine back is as precisely constructed as the camera itself, and is individually fitted to the particular Kodak Ektra with which it is to be used. Hence when Ektra owners wish to equip themselves with additional magazine backs, their cameras should be sent to an Eastman branch or to the factory at Rochester for the necessary precise fitting of each back. Once a magazine back has been fitted, it can be interchanged at will with all other backs fitted to the same camera. The charge for thus fitting the back to the camera is included in the price of the back.

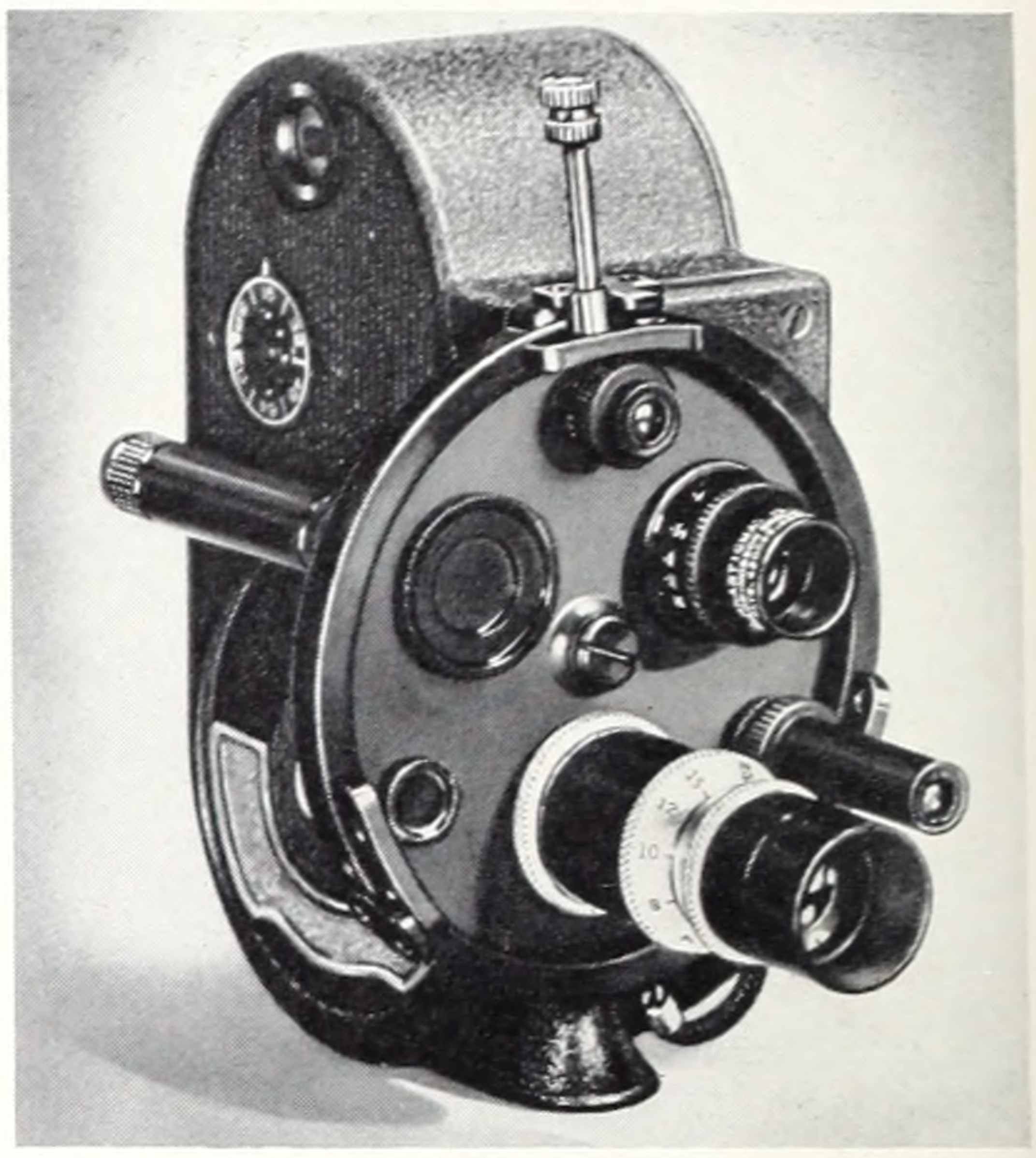
The Kodak Ektar lenses provided for use with the new Ektar are surface-treated by a process which increases both the light-transmitting power and the definition of the lens. This treatment, similar to that in extensive use on the lenses of major-studio movie cameras, affords superior contrast in black-and-white negatives, greater color purity in Kodachrome pictures, and lessened flare when shooting into strong lights.

Operating refinements include the parallax-correcting finder already mentioned; a red dot on the camera-body to mark the exact focal plane for precise film-to-subject measurements in extremely close work; a direct-reading depth-of-field scale on the lenses, together with a red dot on the focusing scale to serve as a supplementary focusing index when using infra-red film; and a positive lock on the shutter-release to prevent accidental exposures.

A neat brown cowhide combination case is available for the Kodak Ektra, to accommodate the camera with lens, an extra magazine back, two film cartons and several filters. All Wratten filters, Kodachrome filters and Pola-Screens are available for use with the Ektra-Ektar combinations. Prices on the new camera range, according to lens equipment, from $235 to $325, with individually-fitted magazine backs priced at $55.

Quick Shift "Zoom Attachment" for Filmo Turret 8

Said to permit the owner to approximate many professional Hollywood trick shots, the new Quick Shift Zoom Attachment, now available for the Filmo Turret 8, makes possible a quick shift from one lens to another — ideal for changes from long range shots to close-ups—without stopping or moving the camera.



The effect on the camera is said to be very unusual. At the end of a shot filmed with a 12½mm. lens, for example, the whole scene suddenly drops from the screen, while another scene, perhaps shot with a 1½-inch lens, slips down onto the screen from above, showing a close-up of the most interesting subject of the preceding scene—all filmed while the action is still taking place. Thus the action of the Hollywood "dolly" or the zoom lens is approximated.

Further flexibility is claimed by Bell & Howell for this Zoom Attachment in that wipe-ons and wipe-offs may be effected. Moving the lens out of position at the end of a scene creates a wipe-off, while returning the lens to the original photographing position creates a wipe-on. A handle is provided, for moving the turret evenly and steadily, and a gentle positive stop locates the lens exactly at the camera aperture.

This new Quick Shift Zoom Attachment is priced at $13.50 when ordered as original equipment. Installed on the owner's camera now in the field, the price is $16.50. The attachment must be installed at the Bell & Howell factory in Chicago.

G-E Meter Tips

A cleverly-designed leaflet showing the three methods of using the General Electric exposure-meter under conditions of bright, medium and dim light—including the incident-light reading method—has been issued by G-E. It is available free through G-E dealers and branches, or from the factory at Schenectady, N. Y. In writing the factory for a copy, it's safest to specify leaflet No. GED-678B.

Correction

Describing the new Movie-Mite 16mm. sound projector in this department, we made the statement that the light-source was a 50-cp. automobile-type bulb. This,

(Continued on Page 86)

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"Citizen Kane"

(Continued from Page 55)

jectives conventionally used have tremendous depth of field when stopped down to such apertures. Wide-angle lenses such as the 35mm., 28mm. and 24mm. objectives, when stopped down to f:11 or f:16 become to all intents and purposes universal-focus lenses.

But we needed every bit of depth we could possibly obtain. Some of the larger sets extended the full length of two stages at the RKO-Pathe Studio, and necessitated holding an acceptably sharp focus over a depth of nearly 200 feet. In other shots, the composition might include two people talking in the immediate foreground—say two or three feet from the lens—and framing between them equally important action taking place in the background of the set, thirty or forty feet away. Yet both the people in the immediate foreground and the action in the distance had to be kept sharp!

In still other shots, Welles' technique of visual simplification might combine what would conventionally be made as two separate shots—a close-up and an insert —in a single, non-dollying shot. One such, for instance, was a big-head close-up of a player reading the inscription on a loving-cup. Ordinarily, such a scene would be shown by intercutting the close-up of the man reading the inscription with an insert of the inscription itself, thereafter cutting back again to the close-up. As we shot it, the whole thing was compressed into a single composition. The man's head filled one side of the frame; the loving-cup, the other. In this instance, the head was less 16 *inches* from the camera, while the cup was necessarily at arm's length—a distance of several feet. Yet we were able to keep the man's face fully defined, while at the same time the loving-cup was in such sharp focus that the audience was able to read the inscription from it. Also, beyond this foreground were a group of men from 12 to 18 feet focal distance. These men were equally sharp.

This unorthodox technique, as might be expected, brought with it a completely new set of photographic and lighting problems. Solving them taught us a lot. For example, there is the matter of setting focus on scenes like these, where it is necessary to spread the depth of field over an incredibly great area. Any experienced cinematographer or still photographer will automatically reply, "That's easy—just split your focus between the nearest and farthest points you want to keep in focus!" Yes—that's the answer—but just *where* should you focus your lens in order to do this?

This is something only practical experience can answer consistently, for while the depth of field of all lenses falls off more sharply in front of the point of focus than behind it, this effect varies not only according to the focal length of the lens used, but according to the degree to which it is stopped down and the point upon which it is focused. Gaining this experience, one certainly learns surprising things about the behavior of lenses. For example, I discovered that a 24mm. lens, stopped down to f:8 or less, becomes almost literally a universal-focus objective at a certain point. If it is set to focus on a point 4 feet 6 inches in front of the camera, everything from 18 inches to infinity will be in acceptably sharp focus. There are also some lenses which as they are stopped down, suddenly reveal totally unexpected optical characteristics at certain settings, and quite as inexplicably lose them as they are stopped down further. I have known of instances in which lenses were excellent until they were closed down to, say, f:6.3, but became distinctly inferior at apertures below this point—only to recover their quality again as the diaphragm passed the f:11 or f:16 mark.

Lighting for this combination of ultra-fast film, coated lenses and radically reduced apertures offers its own new problems. One has to learn a completely new system of lighting-balance. The fast film tends to flattened contrasts: but the coated lenses and the reduced apertures both tend to increase contrast. As a result, one must light scenes made in this manner with much less contrast than would be his custom under more normal circumstances.

Again, the precise degree of change depends upon the stop used; but in general, the shadows must be "opened up" with a more general use of filler light, the highlights must be watched, and when optical diffusion is used, diffusers such as the Scheibes, which tend to soften contrasts, are generally preferable. Obviously, too, when you are dealing with film of the extreme sensitivity of Super-XX, you will find that even at reduced apertures, extremely delicate gradations of lighting-contrast pick up, registering far more strongly on the film than they do to even the trained eye. Yet, strangely enough, once a cinematographer has accustomed himself to this type of lighting, it becomes in many ways easier than more conventional lighting, for it is simpler, less artificial, and employs fewer light-sources.

A further innovation in this picture will be seen in the transitions, many of which are lap-dissolves in which the background dissolves from one scene to another a short but measurable interval before the players in the foreground dissolve. This is done quite simply, by having the lighting on set and people rigged through separate dimmers. Then all that is necessary is to commence the dissolve by dimming the background lights, effectually fading out on it, and then dimming the lights on the people, to produce the fade on them. The fade-in is made the same way, fading in the lighting on the set first, and then the lighting on the players.

In closing, I would like to pay high tribute to those who were associated in the making of "Citizen Kane." Producer-director Orson Welles, of course, heads the list; he is not only a very brilliant young man, but also one of the most delightfully understanding and cooperative producers and directors with whom I have ever worked. Art director Perry Ferguson is another whose ability helped make "Citizen Kane" an unusual production. His camera-wise designing of the settings not only made it possible to obtain many of the effects Welles and I sought, but also made possible the truly remarkable achievement of building the production's 110 sets, large and small, for a total expenditure of about $60,000 —yet gave us sets which look on the screen like a much larger expenditure. RKO special-effects expert Vernon Walker, A.S.C., and his staff handled their part of the production—a by no means inconsiderable assignment—with ability and fine understanding. Finally, the operative crew who have been with me for so many years—Operative Cinematographer Bert Shipham, and Assistant Cameraman Eddie Garvin—played their accustomed parts in helping me to put Orson Welles' initial production on the screen. Experimenting as we were with new ideas and new methods, none of them had an easy time. But thanks to the spirit of understanding and cooperation which prevailed, we emerged with what I think will prove a notable picture, and, I hope, the starting-point of some new ideas in both the technique and the art of cinematography. END.

Fantasound

(Continued from Page 59)

cut completely from the downstage speakers and reproduced at a higher level by only the auditorium speakers at the side, rear, or top of the house, making it possible to make the sound apparently come from any desired part of the auditorium. In the closing selection of "Fantasia," this technique is employed. The selection is "Ave Maria." The orchestra is played on the downstage speakers as is the vocal choir. When the solo voice enters, it is first played only on the rear speakers, then faded to the ceiling speakers, and finally to the downstage speakers on one side only. The effect is that the voice begins at the rear of the auditorium, floats gradually across the top of the house, and finally comes to rest at the front side of the stage. The dramatic possibilities this new equipment and technique makes possible will be obvious.

It will be observed that the present "Fantasound" system makes use of as many standard commercial units as possible. At present, RCA is understood to be building ten sets of "Fantasound" reproducers, which will be utilized in special travelling presentations of "Fantasia." It is not at present intended to release this production generally at any time, but instead to make it a perpetual special show, producing a new version every year. Meantime, it is planned also that the fourth Disney feature, "Bambi," will also be produced in "Fantasound."

What will be the future of "Fantasound" is as yet undecided. That it pro-

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EASTMAN NEGATIVE FILMS

vides radically improved sound reproduction is conceded by all who have had an opportunity of hearing it. Whether or not the industry will eventually make the incredibly costly change-over to "Fantasound" or some similar system cannot as yet be foretold. The first "Fantasound" installation, built bit by bit by the Disney engineers as they worked out the technical problems involved, is understood to have cost in the neighborhood of $200,000; the present installations are, it is understood, being built for a cost of approximately $30,000 apiece. Built in quantity sufficient to re-equip even this country's theatres, it would seem possible that the cost might be even further diminished. It is also not by any means impossible that as the new system becomes more familiar to a wider range of engineers, the idea may well be caught up and modified to a point where it will continue to produce comparable effects with considerably less special equipment, and become workable in the theatres on a basis more closely approximating present conditions. At any rate, "Fantasound" offers the industry so many new and worthwhile technical and artistic concepts that it seems sure to become the parent of yet other developments which should advance not only Disney's sound, but that of the whole industry. END.

Réné Clair

(Continued from Page 60)

this knowledge of cutting helps is in planning and using the sets. All too often, they are over-dressed; they contain so much 'realistic' detail that the audience's attention is attracted from the story-action.

"To my mind, sets and their dressing should be held as simple as possible. There should be only such furniture as must be actually used in the scenes. For instance, when we started 'Flame of New Orleans,' art-director Jack Otterson gave some lovely sets. When I saw the designs, and later the finished sets, I was delighted. But later, when they brought the set-dressings and furniture in, I felt something was wrong. The dark furniture and patterned upholstery looked wrong against the classic simplicity of Otterson's well-designed monochromatic sets.

"So I had them remove all the furniture except those pieces actually to figure in the action of the picture. One large set, for example, contains only a mirror, a chair, a table and a grandfathers' clock, all of them specially refinished in the same color as the set-walls, but a slightly darker tonal value. I even had them take out the carpeting and replace it with a hardwood-finish flooring.

"In reality, that set looks bare. But on the screen, it won't. Between the action of the players, Otterson's artistic set-design, and the skill of my old friend Rudy Maté, A.S.C., who is directing the photography, I'm confident that no one in any audience will notice the scarcity of furniture. On the contrary, the set will seem a normal—and attractive—room.

"In this, we are taking advantage of the selectiveness of the camera. Rudy and I will see to it that as we make each scene, there is enough in it to provide a convincing background for the action. And by eliminating surplus furnishings, we'll keep that background from stealing the scene from the players.

"As a matter of fact, we're merely doing beforehand something that all directors of photography do instinctively when they are shooting. How often haven't you seen an ace cameraman, as he squinted through his camera, call the stage crew and have them move this piece of furniture or that one out of the scene? He is simply eliminating surplus details which have no pictorial or dramatic reason for being in the scene, and which clutter up his composition. Working as we are, we are simply eliminating these things before Rudy has to hold up production asking the crew to do it later.

"For that matter, I think the furnishing of sets is something that deserves more attention than any of us give it. Because a chair or a davenport is in itself an attractive piece of furniture is no indication that it will be satisfactory on a set as a background for given action. Sometimes the finish of the woodwork is too dark, so it stands starkly out in front of the lighter-toned walls. Sometimes a prominent pattern in upholstery can clash violently with the lighting, or even with a woman player's costume.

"Such little details make the work of both the director and the cinematographer unnecessarily harder, and detract from the final dramatic value of your picture on the screen. And this isn't a failing common to Hollywood alone! I remember how in one picture I made in France we sweated over just the same problem. The furniture was too real-looking against the background of the set, and we were trying to maintain a slightly fanciful mood. We finally solved the problem by placing a big net scrim between the actors and the set and furniture behind them. And how that made the cinematographer work, getting the lighting he wanted without making the scrim stand out like a sore thumb! He did it—but it would have been much better for all of us if the furniture had been right from the start.

"In closing, let me say it is a great pleasure being over here and being able to work with Hollywood's great cinematographers. You have no idea how closely we in Europe followed the work of America's cameramen. As soon as any American film opened in Paris, we of the film colony would attend to study and admire the work of Hollywood's cine-technicians. Really, I feel I know the work and styles of the various members of the A.S.C. as well as if I had been here among them for years. It is, I assure you, a pleasure to know I am likely to meet and work with these fine artists whose work I have so long admired."

END.

Multiplex Lamp

(Continued from Page 61)

the placing of set lights. Since the lights on the camera are so effective, they will take care of variations of general lighting that otherwise would have to be adjusted with great care, by parading stars or at least their stand-ins, over the ground to be covered.

And finally, it must be obvious that no lighting system serving this particular purpose could be so economical.

Wherever the camera points, there the light swings automatically, covering little more spread than that of the lens angle. If you're out to save on juice, there is just one more little item I can point out in favor of my pet light.

I don't suppose it can be called a revolutionary innovation, but it is an improvement on past efforts in this direction. An improvement so practical that it makes my tasks and problems ever so much easier.

Editor's Finder

(Continued from Page 62)

Australia, Holland, Switzerland, Japan, India and Sweden—all send one or more photographic and cinematographic publications, both professional and amateur, across this desk. The world may be at its neighbor's throats, but picture-making must go on!

And perhaps the most hopeful sign of all is the fact that in all of these publications—even those from the warring countries — seldom, if ever, are the hatreds and political slogans motivating the war and its hatreds mentioned directly or indirectly.

None of us can foretell what may come out of this war. None of us can say with any degree of accuracy which way of life may emerge triumphant — even though we may have our personal opinions and hopes. But whatever emerges from today's world-wide horror, we can look confidently to the spirit of comradeship and universal camera-fellowship which inspires the writers, publishers and readers of these magazines today, to play a vital part in restoring the spirit of universal understanding and fellowship upon which, once peace is restored, we must all strive to build a new and happier world.

Talkies in the Gay 90's

Amateurs today have experimented with making talkies to be shown accompanied by phonograph records but with no mechanical or electrical connection between sound and picture mechanisms. It's not such a new idea. In France in 1897 the singer Paulus engaged the pioneer French cinematographer-producer Melies to make films of him, to be shown to the accompaniment of the singer's records. Visitors to the Paris exposition of 1900 could also see and hear a variety of programmes of this type, ranging from grand opera to vaudeville.

For color indoors,

Kodachrome Type A, color-balanced for use by Photoflood light. Fast enough for use with a few well-reflectored lamps. Comes in 100- and 50-foot rolls at $8 and $4.30, and in 50-foot magazines at $4.65.

For color outdoors,

regular Kodachrome, the brilliant, full-color film that has given home movies a totally new importance. Its price, of course, includes processing and return within this country. Regular and Type A are priced alike.

REMEMBER ALL FIVE...

Of course, you probably have your favorite Ciné-Kodak Film. That's natural. But don't forget that, among 16 mm. Ciné-Kodak Films, there are four others, all of them with specific qualities that make them valuable. Here are all five:

High speed

is, of course, the outstanding quality of Super-XX. Use it indoors by artificial light or outdoors when the light is poor. In 100- and 50-foot rolls at $6.75 and $3.75; in 50-foot magazines at $4.

Beauty in black-and-white.

That's what Super-X offers, and offers so consistently that it has become the favorite of many who really know their movies. In 100- and 50-foot rolls at $6 and $3.25; in 50-foot magazines at $3.50.

For utility

there's Safety Pan, which figures little in the news, but that's because it's modest. When you don't need the special capacities of any of the other four, try Safety Pan. In 100-foot rolls only, at $4.50.

NOTE. For 8-mm. film users, there are four Ciné-Kodak Films: both types of Kodachrome, Super-X (for speed), and "Pan" (in 25-foot rolls only), all at the economical "Eight" price levels.

EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

Costume Picture

(Continued from Page 69)

for departure the following day on a lecture tour. The result was that we rushed to obtain the costumes and started retakes at approximately 11:00 at night, finishing at dawn.

My Eastman 8mm. camera with an f:2.7 lens is not equipped with a windback device or equipment for fades, so montage scenes were accomplished by taking the film out in a darkroom, running it through the camera again, and making a notation of footage. Montage effects were used whenever practicable; to depict the Civil War, to suggest building of the home on the Colorado mining claim, and finally to express mounting wealth and subsequently the collapse of the silver market.

The Civil War was expressed by composite shots of flash-powder explosions in slow motion, filmed over leaping flames, with appropriate written subtitles photographed over all. Building of the home of wood and stone comprised multiple shots of actual construction of a structure being erected on my property at that time.

The rise and fall of the great fortune was expressed by a mounting stack of coins and paper money, which subsequently was filmed toppling over in slow motion, paper money being dropped from the ceiling into an electric fan for an added effect.

Titles were filmed by superimposure also. First the backgrounds showing an old table with a mirror above it; then the characters were made to fade in and out of the mirror as introduced by appropriate titles photographed over all. Scenes of each individual character were made through a small kitchen window which corresponded in size to the mirror. Thus in the finished picture they appeared to actually be seen therein. For such an introduction of Miss Story, depicting her in a rose garden, it was necessary to literally move the garden into the kitchen. We placed a blue placard behind her to resemble the sky, then cut many plants and flowers which were suspended from the ceiling. Through the window it actually appeared to be a rose garden on a sunny day, but from the interior it resembled a horticulturist's experimental laboratory more than anything else!

A picture of this type presented scores of minor details to be eliminated. For instance, of course, no modern vehicles or wiring could be permitted to be seen. Then too, it was necessary to remove wrist watches, brilliant nail polish, and other evidences of modern times. In all interior scenes, no modern fixtures, lamps or furniture could be used. Just try to film a period picture to fully understand the countless items which require attention! It goes without saying that you will appreciate this type of picture more the next time a professional one appears at your neighborhood theatre.

Gliding

(Continued from Page 67)

ments being locked by one wing nut. The bend in the vertical tube, therefore, allowed us to obtain horizontal correction through an arc of some forty degrees. This was more than enough to compensate for the slight deviations from vertical to be found in the short lengths of tubing through which the mount was clamped.

Some means had to be provided to operate the camera, which was at times twenty feet from the pilot. As the spring capacity of the camera-motor was sufficient for about three normal shots, it was necessary to have a release which would both start and stop the camera. We first tried a twenty-foot cable release, but the necessity for taping it down against flapping in the wind resulted in bends which made the device useless. With the help of Carroll T. Driscoll we started working on an electric release and, after a couple of unsuccessful attempts with solenoids, we built the magnetic release shown in the photographs. The core was salvaged from some obscure relay and the coil wound to give a current drain of two amperes at six volts. A section of aluminum channel was fastened to the armature to give a sufficiently long throw without an impractically large air-gap. It might have looked better, but it worked perfectly. We used a six-volt battery of the "hot-shot" type and provided the pilot with a toggle-switch and a signal light operated by a contact on the camera release-button. This gave us a fairly positive means of knowing when the release button was completely pressed, but of course, did not indicate stoppage of the camera due to a run down spring. We were very careful of timing, however, and spoiled only one shot from this cause. The switch and light bulb were mounted on a small clamp for attaching to the lower edge of the instrument panel.

One of the most important considerations in this special equipment was keeping it light. On a plane that weighs only 250 pounds to begin with, lightness is imperative. The camera weighed about eight pounds and the mounting bracket and magnetic release about two and a half pounds more. The camera struts, six and seven feet long, weighed about four pounds each. We were bothered for a while by the great lack of rigidity in our setup. When mounted, the camera could be moved an inch or two by the pressure of one finger, and on take-offs and landings was probably waving through a distance of nearly a foot. (A horrifying sight the first few times—when it is your only camera!) Guy-wires were necessary in some positions, but their tendency to vibrate in the wind led us to eliminate them wherever possible. Experience proved, however, that though far from rigid, the supports were remarkably stable and, in reasonably smooth air, gave pictures which show no perceptible camera-motion.

Altogether about nine or ten different locations for the camera were used to show different phases of flight and call attention to different points. The flight sequence of the script finally evolved as a simple glider flight of sufficient duration to show the various factors involved in taking off, keeping the plane aloft in the upward currents on the windward side of a slope, and landing. We plotted this flight very carefully, trying to choose the best camera-location for each shot. About thirty-five flights were required to get the shots we needed.

We ran into some amusing things, too. After fighting a tripod for a full day and wasting 150 feet of film in an effort to get 20 feet of soaring gulls, we decided that maybe there were times when a tripod wasn't really necessary. Doubling the camera-speed and using a 2" lens, we got good results on hand-held shots. The other tough but amusing assignment was getting the background for the titles. We wanted this to be a shot of the glider in flight, and it was necessary to get footage equivalent to the entire capacity of the camera spring. One of us had to run the tow-car for the ship. That left the other fellow standing out on the edge of the cliff behind the tripod, a wrist-watch taped over one ear, trying to follow the plane in the finder, start the camera, fade in with the lens iris, count the seconds by the ticks of the watch, and iris out at the very end of the run. Really quite a problem in mental gymnastics!

As was to be expected, we got some shots that we didn't think we could get, and others that we thought were going to be easy, proved impossible. Not having the resources to spend unlimited time on any one thing, this sometimes called for minor changes and a good deal of ingenuity in cutting. On the whole however, surprisingly few retakes were necessary and we considered that cutting 1200 feet to 400 a good percentage in view of the difficult nature of the subject. Our work would have been easier if we had been able to obtain processing facilities comparable to those available in 35mm., but the film seems in a way unique because it could not have been made with a 35mm. camera. Added weight and bulk would have made impossible many of the things we did.

It was amazing to us how Hawley Bowlus was able to fly at all with that heavy bulge hanging seven feet in front of the ship and half-way to the wingtip, sending its inevitable turbulance toward the leading edge. But it was no ordinary ship, and no ordinary pilot. When questioned anxiously, he smiled and said "I didn't even know it was there!"

The sound was done at Telefilm by our good friend Peter Gioga, and Don McNamara presided at the microphone. Finding suitable recorded music was a task. There is much "soaring music" to be had, but most of it is to sad. We finally agreed on parts of the "Mother Goose Suite" by Ravel. It had a flowing rhythm which seemed to fit the emotion we were trying to convey. After all, the *feeling* was what we were trying for; we hope the audience will not be conscious of the technique, and that they, too, will be carried aloft and enchanted by this "dream of the ages come true."

END

Caribbean Cruising

(Continued from Page 72)

skirts of Charlotte Amalie there is a quaint little settlement of French who fled from the Breton coast to the new world in search of religious freedom. They originally settled on St. Bartholomew, but later moved to St. Thomas where they have enjoyed the privilege of living their own lives both under the Danish rule and the United States government. They prefer to live by themselves, are somewhat emaciated from intermarriage and are pathetically poor, but seem to be content with their lot.

Their doll-like houses cluster around the Catholic Church which dominates their village and life. The women all wear the same style straw hats made from native grass by their own hands. The men's hats are made of the same material but are a trifle different in shape. The women and children all weave hats, mats and baskets to sell to the tourists. The men, although small in stature, are sturdy fishermen who take their frail, open boats far, through rough seas, to make a small catch to supply food for the family and have a few to sell for cash.

Almost adjoining St. Thomas is the island of St. John, once rich with large sugar plantations but now famous only for bay rum and a truly primitive life in a land entirely free from automobiles. There are some of the most beautiful palm-fringed bays in the whole West Indies tucked away beyond the headlands in St. John. The water is unbelievably clear and blue. It is an ideal spot to build up a recreation sequence by making a trip on a small pleasure sail-boat, working in lounging, bathing, fishing, sailing and camping. Horses can be rented on St. John for trips to some of the plantation ruins, and if you have a group you can build up a good action-sequence with the riders.

On St. Croix, the two ancient towns of Fredrickstad and Christenstad are picturesque and there is some historical importance in the store where Alexander Hamilton clerked as a boy. The countryside of St. Croix is flat and unimpressive. Sugar is the principal crop and there is a distillery where the United States government is in the business of making rum.

Going east, it is over a hundred miles to the next island, St. Martin, half French, half Dutch, and there is really no reason to stop there for pictures.

About forty miles to the south is one of the most unusual islands in the West Indies. It is Saba, a Dutch Island where 1600 people eke out a scant living from the steep, rocky sides of an extinct volcano and live down in the now dormant crater. Everything about Saba is interesting and there is a picture at every turn of the trail. Saba is the kind of place in which you will want to stay a couple of weeks and make a complete documentary reel.

Next comes St. Eustatius, another Dutch island—poor and uninteresting photographically.

Then St. Kitts, English and also uninteresting for pictures.

About twenty miles south is St. Nevis, famous as the birthplace of Alexander Hamilton and really rich in picturesque settings with quaint buildings and aged trees. This far south the lush tropical vegetation is much more in evidence and the landscape seems to swing into suitable picture-proportions.

To the southeast is Antigua, very British in atmosphere and history. It was here that Lord Nelson set up shipyards to recondition his ships. The old fortresses on land promontories are good for atmosphere and it is worth a stop-over.

Next in line to the south is Guadaloupe, French in every respect. The market square with fountain in the center is by far the most photogenic market of all. The women are also picturesque and their wares varied and colorful. You can get all angles on this market including a high shot looking down from

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a balcony, views looking through the sturdy iron fence, angle-shots including part of the fountain, and all kinds of close-ups. To make the close-ups as natural as possible it is advisable to use a hand-camera, and if possible a long-focus lens. I've always found that if I don't rush in and start shooting as soon as I arrive, but casually look around and linger with the people. It is much easier to make natural shots after they have become accustomed to seeing me.

Dominica is the wildest and most primitive of the lot and it is here that the only surviving Carib Indians live in seclusion—two days by donkey trail back into the mountains. The passenger steamers usually arrive in Dominica at night. There's great rivalry between the stevedores who paddle out in great dugout canoes to take off the cargo. They lie off at a distance until a signal is given and then paddle furiously to see which boat can get the first sling of cargo. If you can have Mogul-base 2000 watt photofloods put in the ship's floodlights, then you can really get some dramatic shots of these natives in their boats. You will of course have to use Super XX or Triple-S Panchromatic with your lens wide open. To Be Continued

Showcase

(Continued from Page 78)

we find, is not the case. It's a standard General Electric S-11, bayonet-base 110-Watt projection globe. Movie-Mite engineers inform us it illuminates the MM.'s screen with approximately the same brilliance as the customary 750-Watt lamp on a screen 27x36 inches. We apologize to both Movie-Mite and our readers for the error, which came from a too-hasty inspection of the first "mighty mite" seen and heard in Hollywood. Or maybe the new sealed-beam headlights on our car led us to over-rate auto globes!

B. & H. 2000-Foot 16mm. Reel

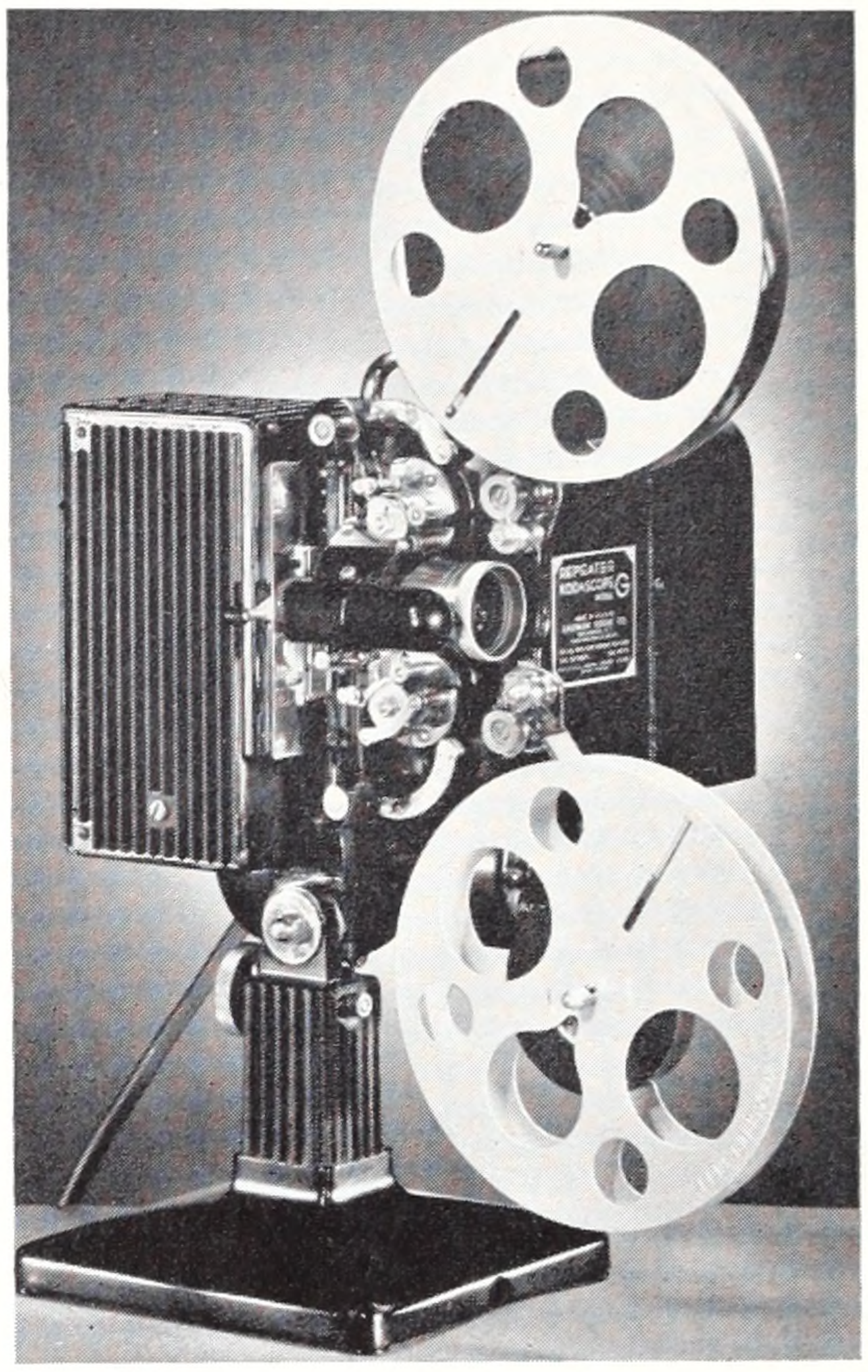
Completing the Bell & Howell line of 16mm. projection reels is the new, 2000-foot spring-steel reel recently introduced. The B&H line now includes 400-, 800-, 1200-, 1600-, and the new 2000-foot reels, all of spring-steel. The big, new reel may be used with sound projectors as well as with the larger 16mm. silent projectors. It will permit an hour's continuous projection of sound film, an hour and a half of silent film.

The new 2000-foot reel retains the threading ease of all other Bell & Howell reels. The film is simply pressed against the hub, where spring clips hold it firmly in place.

A footage gauge, engraved on each reel, shows at a glance the amount of film wound on the reel. The smooth, rounded edges on rims and spokes prevent cutting or scratching fingers or film.

The Bell & Howell announcement states that a 2000-foot humidor can, cadmium plated to prevent rust, is available for the new reel. The film title may be written anywhere on the can without using a paper label, and the "tell-tale" disk of the humidor pad is an added convenience in indicating visually when moisture is required for black-and-white films.

The new spring-steel 2000-foot 16mm. reel is priced at $4.00, the 2000-foot humidor can at $3.00.



Repeater Kodascope For Business Films

The Repeater Kodascope, Model G, is designed for automatic repeat projection of 16mm. films with a time interval between each showing, is intended for use in shop windows, exhibition booths, and all other places where a motion picture is to be shown at regular intervals without the continuous attention of an operator. It projects any 16mm. film up to 400 feet, or any desired part of the film . . . then turns off the lamp and rewinds itself as the crowd changes . . . and then automatically opens another projection cycle.

An interesting feature—and one of the most popular—is that no cutting or loop-splicing of the film is required. To prepare any 16mm. film for repeat projection, small adhesive rubber pads are simply pressed into position near the start and end of the reel. These pass between small rollers and actuate electric relays, thus starting or ending the projection cycle. The pads can be placed for projection of the whole reel, or can be set to bracket a small section of particular interest, omitting the rest of the show. And they can be removed readily without injury to the film.

Should the film break or lose its loop, projection stops automatically and immediately, preventing film damage.

Aside from its repeat mechanism, the Repeater Kodascope, Model G, is identical with the regular Kodascope G. There are available six lenses in various focal lengths, and three lamps of various wattage, providing a choice of eighteen lens-lamp combinations to take care of almost any given set of projection conditions.

Maurer Forms New Firm

The formation in New York of a new company under the corporate name J. A. Maurer, Inc. for the production and servicing of professional 16mm. sound motion picture equipment has just been announced by its president, John A. Maurer.

The new company takes over the assets and business of The Berndt-Maurer Corporation, founded in 1934, and will manufacture the Sound-Pro Camera, B-M Sound Recording System and B-M 35mm. Sound Recording Galvanometer Units as previously. Manufacturing and marketing policies continue as formerly without any changes in equipment design but with increased emphasis on new developments in motion picture equipment and related fields.

John A. Maurer, who for the past two years was president of The Berndt-Maurer Corporation, continues in the same capacity for the new organization. He is best known for his pioneering work in the development of 16mm. sound motion picture equipment. Outstanding among his contributions is the B-M Sound-On-Film Recording Unit which several years ago introduced a new standard of reliability for this type of equipment. This invention overcame the disadvantages of conventional design by providing a unit capable of handling a sound overload as great as fifteen hundred percent without showing evidence of unfavorable results.

The Vice-President of the new company is William H. Offenhauser, Jr., who will continue as Manager of Precision Film Laboratories, a division of the company which is operated separately and devoted to the processing of sound motion picture films. He is an active member of the Society of Motion Picture Engineers and is well known for his numerous efforts to improve motion picture and sound quality on 16mm. film through advances in processing technique.

Former Factory Manager of The Berndt-Maurer Corporation, Andrew Haxton, becomes General Manager of the Equipment Manufacturing Division of the new company.

Frank Hargrove, who continues as Sales and Advertising Manager for J. A. Maurer, Inc., is a graduate photographic technician whose past experience includes the handling of marketing activities for such companies as Westinghouse and Folmer-Graflex.

Named Purchasing Agent and Traffic Manager of the new company, O. T. Westgard will assume the same duties for which he was formerly responsible in The Berndt-Maurer Corporation. All other personnel of both office and factory will continue in the same capacities for the new company.

Black Tip for G-E 300's

General Electric's lamp department at Nela Park, Cleveland, announces an opaque end-coating (black) on seven types of T10 300-watt G-E Mazda projection lamps. This opaque end finish—at no additional increase in lamp list price—brings these lamps in line with the manufacturer's 400 and 500-watt T10, and 750, 1000 and 1200-watt T12 projection lamps.

The opaque end-coating is now on all G-E Mazda lamps used for 16mm. motion picture projectors and on the majority of lamps used in 8mm. equipments.

Purpose of the opaque coating is to give greater convenience to trade and to consumer and to give better lamp performance. It eliminates the need of providing a metal cap designed to trap stray light which otherwise escaped from the end of clear lamps and shone through the ventilator openings of the projector. It does away with the discomfort of removing the cap from a hot lamp.

New Agfa Sound-recording Film

In keeping with the progress marked in other fields of photography, a new high-resolving sound-recording 16mm. film has been introduced by Agfa Ansco which should go far to advance the standards for high-quality sound reproduction in 16mm. motion picture work.

The sensitive coating of this new film is made by a new process of emulsification which results in an emulsion structure of unusual homogeneity and uniformity of crystal size. This insures clean, sharp resolution of the soundtrack recorded on the film with a blue-filtered exposing light. In order to prevent deep penetration of the blue light into the sensitive layer, with its accompanying diffusion and halation through inter-crystalline reflections, the emulsion is screened with a water-soluble dye. This screening effect fulfills the double function of assisting in creating a surface image and preventing deep penetration of light into the emulsion layer, even with overexposure.

This principle of obtaining a surface image is similar to that employed in 35mm. sound-recording where ultra-violet recording has been adopted to obtain highest quality sound reproduction. Although well suited for 35mm. work, ultra-violet recording technique has not been so successful when applied to 16mm. equipment because of light-limiting factors imposed by the ultra-violet filter, smaller optical systems and light-valves. Accordingly, the common positive-type emulsion has been in general use for 16mm. sound-recording.

The special properties of the new Agfa high-resolving sound-recording film make it an ideal material for variable-area recording equipment, especially when differences between crest and base illumination are great. With ordinary positive film used for this purpose, it is practically impossible to put enough light through the galvanometer to obtain clean crests of printable density without causing the valleys to become filled with the combination of inter-crystalline reflection and halation due to overexposure. The new Agfa high-resolving sound-recording film is said to overcome this limiting factor by enabling the recording of high frequencies with a clean, crisp wave form having fully exposed crests and open valleys.

It is not practical to give exact resolution data in terms of frequencies since much depends upon the recording equipment and the way in which it is being used. Optimum resolution is obtained when a filter transmitting between 4000 and 4500 Angstrom Units is employed with the exposing light. With recorders having insufficient light for a filter of these characteristics, a lighter blue filter having transmission in the blue-green can be used with some sacrifice in resolution. Even when employed with regular, unfiltered incandescent illumination, the new film is claimed to produce much cleaner sound-tracks than are obtainable with ordinary positive film.

Made in Binghamton, New York, by Agfa Ansco, the new Agfa 16mm. high-resolving sound-recording film is obtainable through usual sources of supply in standard lengths. It may be handled under usual positive safelights and can be developed in any clean-working developer producing good contrast, such as Agfa 20 Positive Developer.

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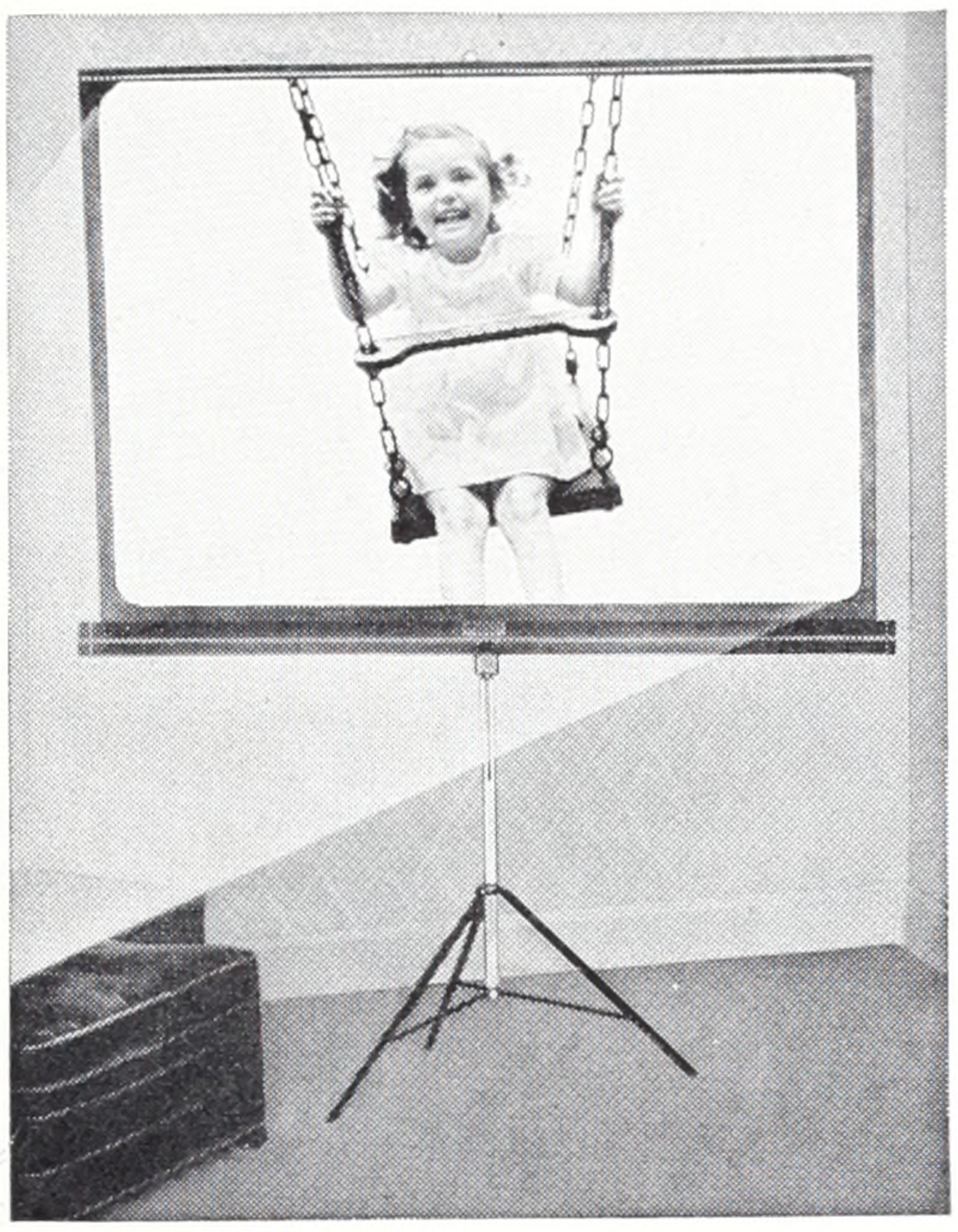

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Title-Making

(Continued from Page 70)

of travel folders as a hand picks up one and draws it closer to the camera. There are innumerable ways to open pictures in this manner and I believe that it adds greatly to the tempo. Tempo is the pace or speed at which a story moves and inasmuch as screen action is motion, then moving titles should enhance the tempo. If all action must be stopped to inject a still title, it must necessarily slacken the film tempo. Thus, if many titles are used, a film can become very draggy.

Many of the newer models of cameras are now equipped with a film back-winding mechanism which facilitates the lap-dissolve problem. I have been requested to give a method of making wipe-off titles for cameras which do not have this back-winding feature. A wipe off title appears to wipe off the screen and is replaced with the following subtitle. Purchase two or three small roller window shades about four feet long at the five-and-ten-cent store, either in tan or white. Unroll one shade and letter your main title in the middle of it, allowing enough margin from the edges to keep the width of the shade outside of the camera field. The main title is lettered "A MOTHER'S ORDEAL." On the second shade, the credit title is lettered—

CAST

THE MOTHER .... JANE DOE

THE SON .... JOHN DOE

DETECTIVES .... BILL DOE
BOB DOE

Each title must be within the same sized area for the camera field. The third shade is lettered—

PHOTOGRAPHY .... JAMES DOE

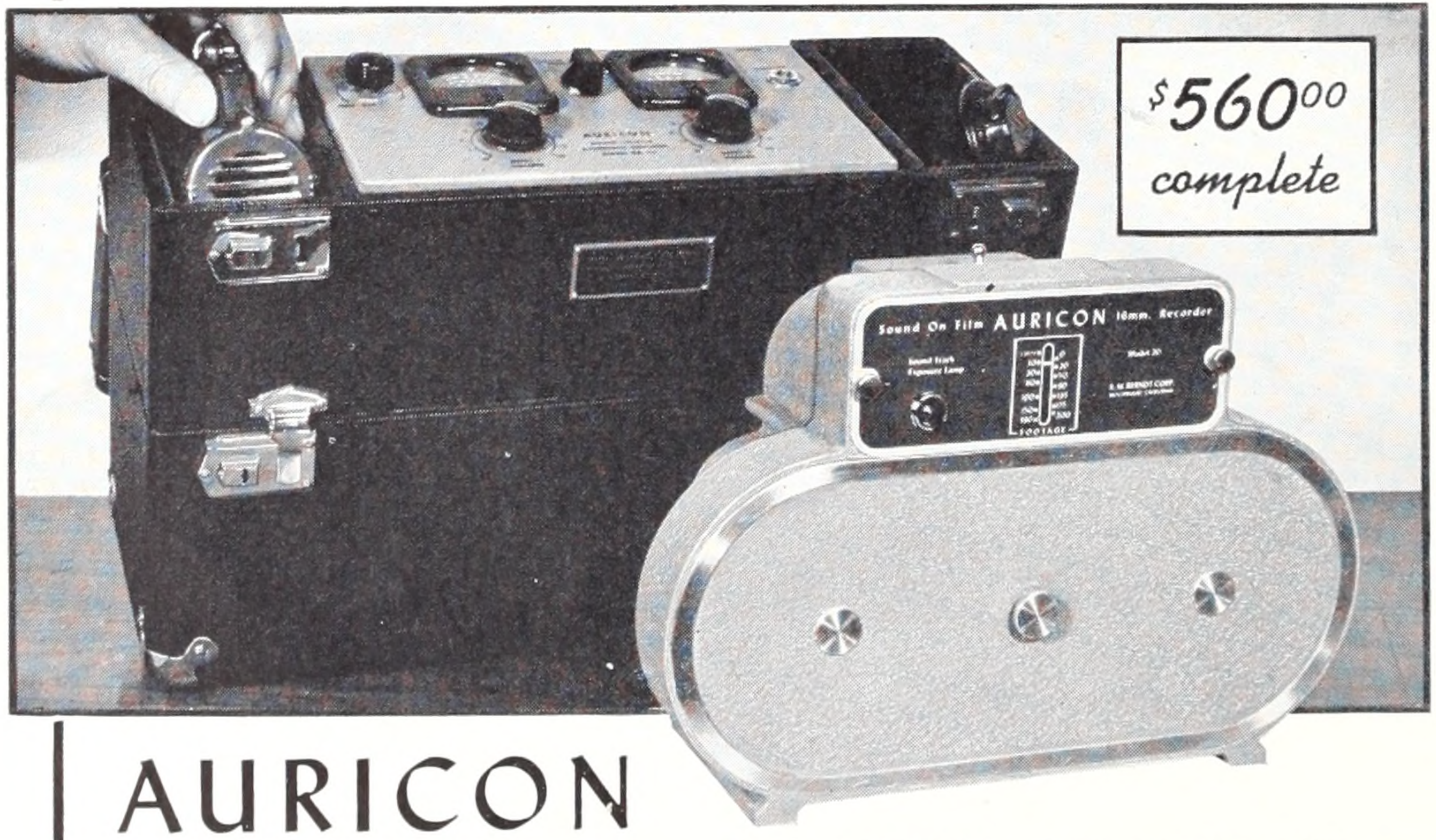
Now lay title Number One on a wide flat surface or floor and thumb-tack the end of the shade to the surface. Place the camera on a tripod, shooting down on the title. Center the title in the finder and be sure to allow for parallax. Now lay title Number Two over title Number One and center its lettering in the finder and thumb-tack the shade end. Title Number Three is placed on top of title Number Two and properly aligned. Roll up title Number Three and Number Two out of the camera field and practice unrolling them over title Number One for uniformity of speed. Don't unroll the titles too fast as you will lose the effect of the wiping off of the titles.

After you are satisfied that the exposure and focusing indicator are properly set, expose title Number One, allowing sufficient reading time. While the camera is still running, unroll title Number Two over Number One and expose footage for adequate reading time. Then unroll title Number Three over Number Two and fade out for the end. You can vary the wipe-offs by letting one shade unroll from top to bottom of the screen and another from the opposite corners or sides. It is very necessary, however, that each title be placed exactly on top of each other so that the lettering is properly aligned in the camera.

Titles which are superimposed on moving backgrounds can be easily filmed, especially in 8mm. Load the camera with a new film, mark the starting-point, and run off eight or ten seconds of the leader, using the second hand on your watch to time the operation. Select three scenes suitable for the wording of three titles, and by your watch film each scene for exactly ten seconds. After this, the balance of the roll may be used for other purposes. After completing the roll, reload it in the camera and again run off the leader with your watch. Scene Number 1 is now in position for title Number 1. Using white letters on a jet-black background, expose title Number 1 for ten seconds. Then expose title Number 2 and Number 3 for ten seconds each. Cap the camera lens and run the balance of the film through the camera. Once you've practiced a bit, you can also fade the lettering of the titles in and out by opening and closing the diaphragm of your lens. The final results should give you snappy white letters against your backgrounds. To increase the contrast, filter the backgrounds slightly to darken any sky areas. The same method can be used in 16mm., but of course you'll have to rewind the film in the dark after first exposing the roll.

Another novel transitional effect can be made by placing stippled or fluted glass, such as is used in shower doors, over the title-card. When the glass is in contact with the card, the lettering can easily be read. By lifting the glass towards the camera, the lettering will become very blurred. When the glass has been lifted after exposing the first title, change the card and lower the glass down into contact with it again. If this is done without stopping the camera, you will get an effect of one title blurring out and the second title coming into a sharp focus. This type is very attractive with Kodachrome, as many rainbow hues are created by the out-of-focus effect. Many a unique effect-title can be made without a back-winding camera, though it requires more patience and thought. Titles of this nature are far more effective and interesting than a cavorting, jumping, animated hodge-podge.

Just as you appreciate a neat, attractive cover on a book, your film audiences appreciate a neatly-titled introduction. Titling is just as important a phase of photography as the editing, camera technique, etc. The care and planning that is evident in your picture should also be reflected in your title technique. **END**



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"Teen-Age" Script

(Continued from Page 73)

down front steps to lawn, camera panning with him.

Scene 22: Long-shot. Bob standing on lawn, his fists clenched.

Bob: Come on down here and I'll show you I mean it.

Scene 23: Medium-shot. Art takes off his coat, then runs out of scene toward camera.

Scene 24: Long-shot. Art runs onto lawn, camera panning with him. Makes a flying tackle at Bob, but Bob sidesteps and Art goes sprawling.

Scene 25: Long-shot. Art picks himself up and approaches Bob more carefully. Bob has his fists up and both boys exchange swift blows.

Scene 25-a: *ad lib* a series of extreme close shots of the fight—fists landing, facial expressions, etc.

Scene 26: Long-shot Nan walking along street. The camera dollies or pans with her. She glances off, and is horrified by what she sees.

Scene 27: Long-shot. Bob and Art battling furiously, with Bob getting the best of it. Nan rushes up and tries to separate them.

Scene 28: Closer three-shot. The boys are still fighting, but Nan finally gets between them.

Nan: Bob—Art—what are you trying to do? Kill each other?

Scene 29: Two-shot of the boys. (Break this into individual shots for silent film.)

Art: (pointing to Bob) **He started it.**

Bob: **You don't really like him, do you, Nan?**

Scene 30: Medium two-shot, Nan and Art.

Nan: **Certainly I do. I'll go around with anyone I like, Bob Sheffield!**

Scene 31: Close-up of Bob, hurt. He gives Nan an inquiring stare, finally hardens.

Bob: All right Nan, if you want it that way.

Scene 32: Full-shot of the three. Bob slowly walks away from the other two, the camera panning with him. FADE OUT.

Scene 33: FADE IN. Medium long-shot. Art's car is parked outside Nan's home. There are fishing-poles tied to the car. Art is in the car and Nan just getting in.

Scene 34: Medium long-shot, from car. Billy comes running up to it, yelling.

Billy: **Hey, take me with you!**

Scene 35: Two-shot, Nan and Art in car.

Nan: Do you mind if he comes with us?

Art (bored): Oh, I guess not.

Nan: Well, run in and tell Mother you're going with me.

Scene 36: Medium-shot. Billy, delighted, races off toward house. LAP-DISSOLVE to similar shot in which he races out of house and gets into car. The car drives off. FADE OUT.

Scene 37: FADE IN. Art's car pulls up near banks of a lake. The three get out and start unloading rods, etc.

Scene 38: Full three-shot. The kids walk to bank or pier. Art and Nan start adjusting their fishing equipment. Billy wanders off, camera following him. FADE OUT.

Scene 39: FADE IN. Full-shot. Billy coming to another part of the shore. He finds a canoe or boat (even an old log will do) and starts pulling it to the water's edge.

Scene 40: He gets in and shoves off.

Scene 41: Full-shot. Art and Nan busily fishing.

Scene 42: Long-shot. Billy, seen from shore. He is now quite a way out from the bank.

Scene 43: Full-shot of Billy. Suddenly his craft tilts and he is thrown into the water. He struggles and grabs at the still-floating boat, yelling for help.

Scene 44: Same as Scene 41. Art and Nan still fishing. They hear the cries, look up and are horrified at what they see.

Scene 45: Long-shot. Art's and Nan's heads and shoulders frame the foreground; in the background, Billy is seen floundering in the water. Nan turns profile to camera, speaking to Art. (Break into close-ups for silent picture.)

Nan: **Oh Art—he can't swim—save him!**

Art: **But, gee, Nan—I can't swim out that far—besides—**

Nan: Art, please do something.

Scene 46: Long-shot. Bob is walking quietly along by the lake-shore. He stops, listens, and looks over his shoulder, then runs off (in a different direction) toward shore. Camera follows him.

Scene 47: Art and Nan standing excitedly on bank of lake. Bob comes running into scene.

Bob: Hello Nan—what's the matter?

Nan (pointing): Look!

Scene 48: Long-shot, Billy holding onto his craft. His hands are slipping.

Scene 49: Close two-shot, Nan and Bob. Bob's eyes open in surprise at what he sees. Nan looks at him pleadingly.

Nan: Bob—he can't swim—save him!

Bob: You bet I will, Nan.

Scene 50: Full three-shot, Art, Bob and Nan. Camera follows Bob as he takes a running dive into lake.

Scene 51: Full-shot. Bob swimming as hard as he can, away from camera.

Scene 52: Close shot, Billy clinging to his craft.

Scene 53: Long-shot, Bob swimming away from camera.

Scene 54: Close-up of Nan, looking into camera. Her face is taut with fear.

Scene 55: Full-shot. Bob—back to camera—swims to Billy, grasps him, and starts swimming back toward camera.

Scene 56: Full-shot. Bob swimming toward camera, towing Billy. LAP-DISSOLVE to shot of Bob scrambling ashore with him.

Scene 57: Bob carries Billy, limp and groggy, up the beach. Nan and Art run in, Nan going directly to her brother. Bob places him on the ground.

Scene 58: Medium two-shot. Nan hugs Billy.

Nan: Oh Billy! Billy!

She looks up at Bob.

Nan: **Oh Bob, you were wonderful!**

Scene 59: Close-up of Bob. He looks shy and embarrassed.

Bob: **Aw—it wasn't anything, Nan.**

Scene 60: Close-up of Nan, smiling happily. FADE OUT.

TITLE:
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Scene 61: FADE IN. Trucking shot of Nan and Bob, again walking home from school together. (Follow this with individual close-ups for silent film.)

Bob: **Then you really like me, Nan?**

Nan: **You bet I do, Bob. Art had me fooled for a while, but not any more.**

Scene 62: Long-shot. As Bob and Nan enter scene along sidewalk, Art's car drives up and stops.

Scene 63: Close shot, Art, leaning out and speaking.

Art: **Wanta ride home with me, Nan?**

Scene 64: Medium two-shot, Nan and Bob. Nan shakes her head, and Bob makes a gesture for Art to be on his way. They smile at each other and start down the sidewalk again. The camera follows them. FADE OUT.

TITLE:

THE END

Focus

(Continued from Page 68)

focus—say from a distance setting to a closer one as your subject walks from a long-shot angle in to a closer position. This can be done easily, with only one or two rehearsals. Just begin by bringing out the tape-measure, studio-wise, and measuring the distance for the two points of focus. Then reach around to the lens with your free hand—usually the left one—and notice in what position your fingers grasp the lens at the start, and then after you've changed the focus to the other position. Go through this motion a few times and you'll be surprised how easy it is to change your lens from one focal position to the other without looking at the calibrations, working solely by feel. It's a point in your favor, too, that most normal 16mm. and 8mm. lenses have so much depth of field that they'll cover up minor errors on your part.

Some amateurs have used little metal rods which clamped around the diaphragm control ring of the lens as an aid in making fades and in following focus on exposure. They simply pre-set the rod with relation to the diaphragm ring so that they begin the shot as usual, and then swing the rod so that it cuts into the finder, at which point they'll know they've opened or closed the lens to the point desired.

This gadget can be used to simplify optical focus following, too. Instead of clamping it to the diaphragm control, clamp it to the ring which controls the focus. In just the same way, it can be set so that when the rod bisects the finder, you'll know you've shifted the focus to the right point.

Idea Exchange

(Continued from Page 77)

compartment beside the notebook.) The box is covered by a hinged cover, which may be fitted with a catch to hold it shut.

For my 16mm. camera, I've some adapters which permit me to use the lenses from my Leica as telephotos for the cine-camera. They're mighty good lenses for the purpose—but they're a good deal more bulky than most regular cine telephotos. So I had three little cannisters made up from duralumin tubing, each of the correct size to hold one of the Leica lenses.

These containers are snapped onto the three legs of the tripod by means of dovetailed slips like those used on the Leica to hold extra finders, range-finder, and the like. In this way, each case can be removed from the tripod when shooting is over, and will serve as an extra-durable case for the lens at all times.

I had duralumin covers made for each of these lens-cases. They fit onto the case with a bayonet-type catch. This is made very simply by placing two little pins on opposite sides of the case, and cutting appropriate L-shaped slots in the sides of the covers. Thus you can slip the cover on, give it a little twist, and be confident the cap won't come off unexpectedly and spill your lens out as you are carrying camera and tripod about between shots.

The inside of the metal cases should be lined with felt or velvet to protect the lens, and it's not at all a bad idea to have a little padding at the bottom to cushion the drop when you put a lens into its case in a hurry. If you make these cases, as I did, just big enough to hold the lenses they're to carry, it will be easier to get the lens out of the case if you cement a leather or fabric strap to the inside of one rim of the case, and extend it across to a slot or loop on the other side. Put the lens on this strap and lower it into the case; to get the lens

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out, just pull gently on the free end of the strap, and the lens will be lifted up.

My cases, as stated, were made to hold Leica lenses; but cases built to accommodate the smaller telephotos regularly used on 16mm. cameras will be just as handy!

GAETANO FAILLACE.

Projectors

(Continued from Page 75)

time, by a rocker which is fitted into the bottom loop of the film; this system is much more accurate than it might appear. It was used successfully for many years in some of the best of the pioneer professional cameras.

2. The "intermittent-sprocket" movement, which is placed below the aperture and revolves intermittently and partially through an angle sufficient to pull the film downward one frame at a time. This is used in the De Vry 16mm. projectors, and in many 35mm. theatre machines.

To Be Continued

Movie Clubs

(Continued from Page 76)

der, and Jack L. Krapp, co-founder of the club, were presented with a filter kit and a make-up kit, respectively, as tokens from the club in recognition of their efforts.

Long Beach Elects

At its January meeting, the Long Beach (Calif.) Cinema Club inaugurated new officers for 1941. Miss Mildred Caldwell replaced Harold Hilliger as President; Ted Phillips and Clarence Aldrich were elected Vice-Presidents; Ray Fosholdt was elected Secretary-Treasurer; H. E. Ward was for the third year re-elected Projectionist, and Bert Williamson, Robin Hadley and H. E. Ward were elected directors.

The new President, Miss Caldwell, has gone to Honolulu to take pictures for the club. In the four years of the Club's existence, it has made an average of two feature-length pictures and several shorts per year. All cameramen may film these stories if they like. The last production, "Happy Landings," is now in the cutting-room and will be ready for preview showings in about 30 days. Seventeen cameramen, both 8mm. and 16mm., shot the story.

Philly Has Contest

All of the winners, and all but one of the entries in the Annual Contest of the Philadelphia Cinema Club, judged at the Club's January meeting, were in Kodachrome. The winners were, 1st Prize, "Hard A-Lee," (16mm.) by Herbert L. Tindall, Jr.; 2nd Prize, "Country Fair," (16mm.) by George A. Pittman; 3rd Prize, "Christmas, 1939," (8mm.) by W. J. Bruner, Jr.; 4th Prize, "Eloquence of Beauty," (16mm.) by V. E. Woodcock; 5th Prize, "Life Is Like a Garden," (8mm.) by Dr. C. A. Bowersox.

Washington S.A.C. Hears Haythorne

Reed L. Haythorne, A.S.C., was the scheduled speaker at the January meeting of the Washington Society of Amateur Cinematographers. In addition, member Wilbur Comings exhibited the movie record he made of the previous meeting's demonstration of lighting, and H. P. Baines presented the second installment of his Kodachrome world-tour "serial."

In one popular 16mm. camera, when shooting at 64 frames per second, the film reaches a speed of nearly 9 miles per hour between each successive frame-exposure, with the stop and start 1/320th second apart.

Photography of the Month

(Continued from Page 65)

raphy and comparatively dark sets—a distinct advantage in this sort of camera-magic. In the present film, he does much of his work with relatively high-key lighting, and against light sets—some of them as nearly white as Art-Director Jack Otterson's set-painting scheme ever allows. Doing all this on what must have been a remarkably short schedule, Fulton deserves high praise indeed; there is but one of his innumerable trick-shots which is not a remarkable example of technical perfection. In that one, the wavering matte-line between Miss Bruce's clothes and her invisible head is rather unpleasantly apparent, and it is unfortunate that the shot could not have been redone.

On the production side, Director of Photography Elwood Bredell has also done a most capable job. Coordinating production camerawork with the techni-

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cal requirements of this type of camera-trickery is no easy task. Doing this on an evidently short schedule, and with few, if any, new sets, is something that really calls for high skill. Bredell has done his work very well indeed. His treatment of the players is excellent; personally, this reviewer considered the shots of Virginia Bruce—those in which she was fully visible, that is—showed her to better advantage than she has appeared in many a more pretentious film.

The range of sets and action in the picture, and its extreme range of dramatic moods—from broad slapstick comedy to "chiller" melodrama—made it almost impossible for Bredell to turn out a visually consistent picture: but in spite of these handicaps, he has done a very meritorious job. Some of his exteriors are really uncommonly fine examples of skillful composition and filtering. We'd like to see him given a film that would give him a chance to live up to the best of these.

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HIGH SIERRA

Warner Brothers'-First National Production.

Director of Photography: **Tony Gaudio, A.S.C.**

Special Effects: **Byron Haskin, A.S.C.** and **Hans F. Koenekamp, A.S.C.**

Lavishing the superb photographic gifts of Tony Gaudio, A.S.C., on "High Sierra" seems rather like using a pile-driver to crush a mosquito. The mosquito is very effectively crushed, no doubt; but the pile-driver could do other jobs far more appropriately. In the same way, Cinematographer Gaudio has handled the photography of "High Sierra" in his accustomedly capable fashion—but "High Sierra" is not such a vehicle as, say, "The Letter," to benefit by Gaudio's mastery of the photographic medium.

To put it bluntly, "High Sierra," for all its pretentious cast and production, is just another gangster picture which, aside from some spectacular location-scenes in the Sierras near Lone Pine, along the Rim of the World, and elsewhere, offers the Cinematographer very little opportunity for distinction.

What Gaudio could do, of course, he did. He has photographed the principals—especially Ida Lupino—with all his usual skill. But the settings and action were against him from the start. So, too, we can suspect, was the schedule. Another definite handicap was the make-up—especially the wig—worn by Henry Hull in a fruitless effort to portray an old man. Our friend Perc Westmore received screen credit as makeup artist on this production, but we would hate to think he was responsible for Hull's atrocious make-up. Recalling that this actor achieved a large share of his fame for portraying the incorrigible "Jeeter Lester" in the stage's "Tobacco Road," (and the appearance of his make-up in the stills from that play) we're much more inclined to blame the actor himself.

The Special Effects Photography of Byron Haskin, A.S.C., and Hans Koenekamp, A.S.C., is one of the better things about the production. There is a great deal of it in "High Sierra," and it is, almost without exception, handled very well indeed.

LIFE WITH HENRY

Paramount Production.

Director of Photography: **Leo Tover, A.S.C.**

"Life With Henry" isn't the sort of production that can offer Director of Photography Leo Tover the unusual pictorial opportunities a film like "Victory" did. None the less, Tover has handled it in an eminently satisfying manner. From start to finish his camerawork proceeds with a sureness and finish that are well worth seeing.

Amateurs especially will find the many sequences in and around the Aldrich home well worth careful study. In many ways the settings designed by Hans Dreier, Earl Hedrick and A. E. Freudeman to represent the Aldrich home are more truly typical of an average American home than are those of most "family" series. Bringing these rooms to the screen, Tover's treatment is an excellent object-lesson in how to light the average room. His use of cast shadow-patterns on the walls, for example, while a trick used in most modern films, is done here not only against settings such as the average amateur might find in his home, but done with a restraint and subtlety which are praiseworthy; for once these patterns lend themselves to natural, pictorial effect without—as is sometimes the case—becoming too "arty."

The light-balancing in the evening sequence on the Aldrich porch is another point that deserves attention. While it is to be assumed that in this instance the expansive background of street and lawn was another of the excellent projected backgrounds which Farciot Edouart, A.S.C., and his capable staff turn out, and as such easier to balance with the front light under the porch than would be the case in actuality, the use of extremely diffuse front-light, of relatively low intensity, coupled with a low-key print, gave an unusually natural effect.

On the other side of the ledger must be mentioned the fact that the musical score by Friedrich Hollander was frequently intrusive, and that in a film graced by a more than ordinary number of excellent projected-background scenes, in one scene—the one on Michigan Avenue, when the Chicago policeman directs "Henry" to the office-building—someone appears to have forced Farciot Edouart's usually capable hand either in choice of background or in lining up, with the result that on the screen the scene is notable as one of the very few inferior transparency-shots we've seen come out of Paramount in a long time.

Free Sistogun Installation

As a means of publicizing the service and installation department of the Kalart Company's West Coast Branch in Hollywood, Miss Leda Dubin, Kalart west-coast manager, announces that no charges will be made for installing Kalart Sistogun speed-graphic focal-plane flash synchronizers purchased during the month of February and sent to this branch for installation. The Hollywood branch, she points out, is now fully equipped to handle service and installations on all Kalart equipment, including Sistoguns, Kalart micromatic flash synchronizers, and Kalart range-finders. The address is 619 Taft Bldg., Hollywood.

Australia Builds 16mm. Sound Projectors

Australian imports of British-made 16mm. sound projectors, recently reduced to the vanishing point by the exigencies of the war, are soon to be supplemented by Australian-built units of the well known Gebescope (British) 16mm. sound-on-film projector.

According to an announcement in the October issue of the Australian Amateur Cine Society's organ, Movie News, the Gebescope Australian distributor, Precision Engineering Company, Pty., Ltd., is starting to manufacture these machines in Australia.

The Gebescope 16mm. sound projector was developed by British Acoustic Films, Ltd., of London, and marketed by Gaumont-British's subsidiary, G. B. Equipments, Ltd., from which it derives its name. A large number of the G. B. 16mm. units are said to have been sold already in Australia, and despite the war demand for them is said not to have lessened.

With the supply drastically reduced by the Battle of Britain, the only alternative was for the Australian distributor, already a manufacturer of 35mm. sound projection equipment, to build them in Australia. The Australian-built units will be duplicates of the British-built models. Deliveries are planned to start early in 1941.

The Gebescope projector may be operated on either alternating or direct current. Projection illumination is supplied by a 500-watt, 100-volt concentrated filament projection lamp through an efficient condenser and lens system.

The design of the lamphouse is such that light from the projection lamp serves as an exciter lamp for the sound scanner. Light from the projection globe is transmitted from the projection lamphouse to the sound scanning system by means of an optically ground quartz tube.

The picture projection mechanism utilizes a long, curved film gate, and substitutes edge tension for the conventional surface tension. This it is claimed provides ample picture steadiness while eliminating danger of scratching the film.

The mechanism is driven through precision-cut hobbed gears, and all major bearings are of the oilless type. Two operating speeds are provided: the conventional 24-frame sound speed and 16-frame silent picture speed. The usual provision is made for coupling either disc turntable or microphone to the Gebescope's sound amplifier.

Air Corps Gets G-E Meters

An order for exposure-meters amounting to approximately $12,000 has been placed with the General Electric Company by the U. S. Army Air Corps, according to F. G. Vaughen, manager of the G-E meter division at Schenectady.

The meters will be delivered to Wright Field for distribution to the various divisions of the army's air service, and they will be used in both aerial photography and studio work.

The Air Corps has been using General Electric exposure-meters for the past year. Their uniform accuracy is particularly helpful in aerial map-making, where an even density is essential when a number of shots must be pieced together.

"The wider use of exposure-meters in the important photographic work conducted by the U. S. Army Air Corps certainly attests to the increased regard now given to correct exposure in making pictures," stated Mr. Vaughen in commenting upon the order. "We are confident that the accuracy and sturdiness of the G-E meter will meet all requirements of severe field use under all weather conditions. Its sensitivity range as an exposure meter is 0.05 to 1700 candles per square foot; it can be used as a darkroom meter for printing or enlarging; and also, because it is calibrated in foot-candles, as a light-meter to balance photographic light."

Silk-Stocking Diffuser

An effective diffuser for diffused-focus effects can be made from an old silk stocking and a pair of small doily or embroidery hoops. Dye the stocking black and cut out a piece large enough to fit the hoops. To use the diffuser, mount or hold it in front of the lens while shooting, being careful no direct sunlight strikes the fabric. By using clippings from a variety of your wife's discarded stockings, of different meshes and textures, a correspondingly varied range of soft-focus effects can be obtained.

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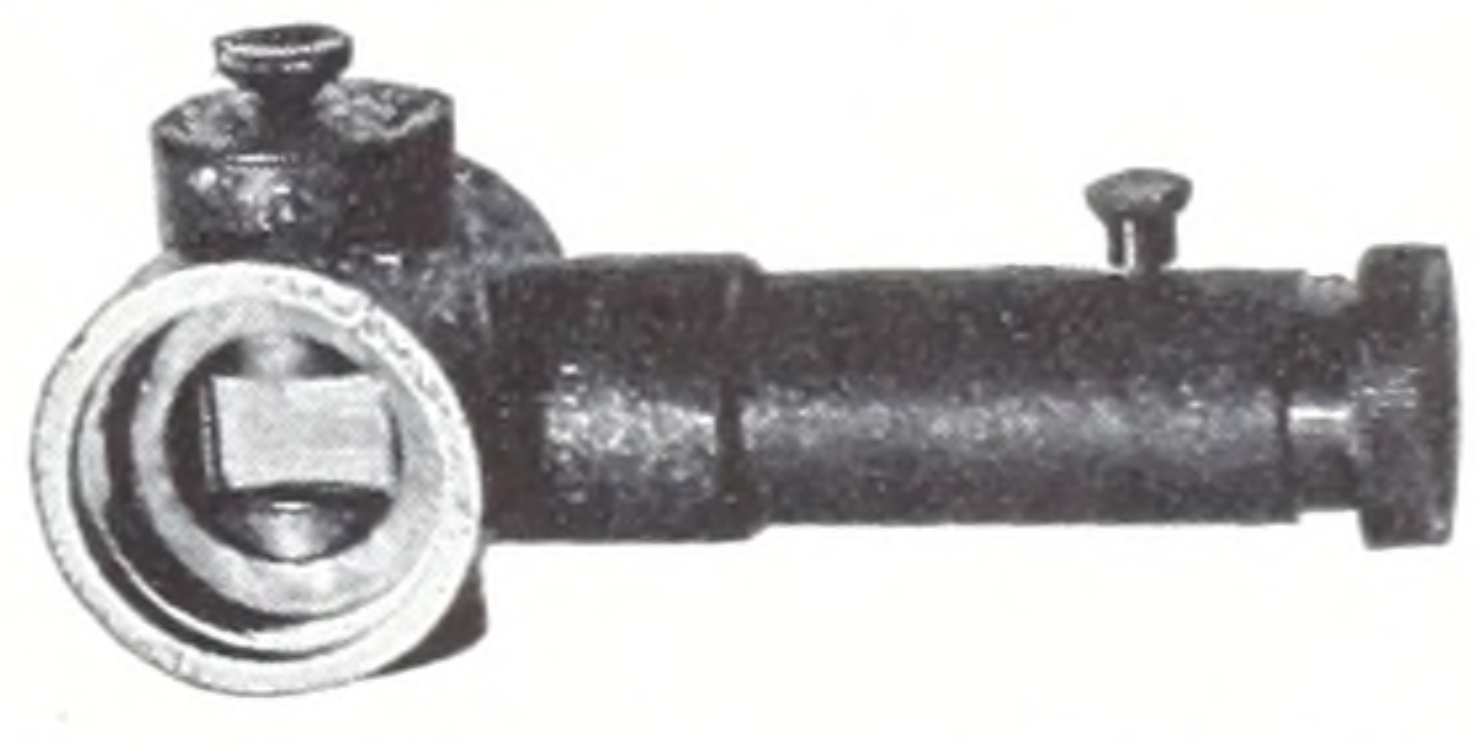

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Form Hollywood Army Photographic Unit

As a part of Hollywood's contribution to the National Defense Program, a survey of Hollywood's trained technicians able and willing to serve the Nation, in event of an emergency, in work for which they are best qualified, is being made through the Research Council of the Academy of Motion Picture Arts & Sciences, under the chairmanship of Darryl F. Zanuck in his capacity as Lieutenant-Colonel in the U. S. Army's Signal Corps. Those interested may register by writing the Research Council at 1217 Taft Bldg., Hollywood, giving complete information on age, education, present position, studio connection, number of years in the motion picture industry, etc. This, Zanuck states, does not constitute formal enlistment, but merely participation in this survey of the industry's militarily-available resources.

Among the cinetechnical specialists needed in the formation of the G.H.Q. Signal Corps Photographic Unit are: animation and title supervisors, motion picture and still cameramen, laboratory chemists, clerks, cooks, picture and sound editors, motion picture electricians, laboratory equipment engineers, laboratory supervisors, machinists, motion picture engineers, motion picture camera department supervisors, negative cutters and assemblers, photographers (copy and printer), developers, projectionists, sound recording and re-recording engineers, supervisors, mixers, maintenance men, boom operators, recording and re-recording machine operators, etc.

Further information may be obtained from studio Research Council Representatives, including Zanuck, at 20th Century-Fox; Maj. Nathan Levinson at Warner Bros.; John Aalberg, RKO-Radio; Bernard Brown, Universal; Farciot Edouart, A.S.C., Paramount; E. H. Hansen, 20th Century-Fox; John Livadary, Columbia; Charles L. Lootens, Republic; Thomas Moulton, Goldwyn; Elmer Raguse, Hal Roach, and Douglas Shearer, A.S.C., MGM.

England Likes "Nine-Five"

More 9.5mm. cameras are said to be used in England than either 8mm. or 16mm. Although the 9.5mm. Pathex standard has never become popular in the United States, it offers European amateurs a frame-size virtually equal to 16mm. at a cost only slightly higher than 8mm. Abroad Bolex, Pathex, and others even offer 9.5mm. sound-on-film projectors.

Club Music Library

An idea worthy of adoption by other amateur clubs is that instituted some time ago by the Australian Amateur Cine Society. This club maintains a library of recorded thematic music for use of members when projecting their films at meetings.

American Calcite Discovered

Calcite, vital in the manufacture of Nicol prisms and other polarizing instruments, has been discovered in commercially workable deposits in the southwestern United States. Accidentally found by a Mexican prospector, the newly-opened deposit has produced calcite crystals up to 1½ feet across. Operators of the new mine have contracted to deliver to Bausch & Lomb the entire output of optically suitable crystals.

The result has been spectacular. Within a period of three months more than 500 pounds of fine spar crystals were mined. Imported crystals have averaged between two and four ounces, and not more than 300 pounds a year have ever entered the United States—none at all in recent years. The scarcity of optical calcite has caused a world-wide search for many years. The chief source had been from mines in Iceland, which had operated since the 17th Century, but which had been severely damaged during the First World War, permanently impairing the quality of its output. Finds have been reported from time to time from various countries, but with the exception of meagre shipments from Spain and South Africa, no calcite of optical quality has reached the market for many years. The new American find is therefore of considerable importance to the optical industry. Supplies of calcite are a necessity to makers of optical instruments of polarizing types, such as saccharimeters, colorimeters, photometers, polariscopes and polarimeters.

Pioneer Camera Trickery

From 1896 to 1914 the "ace" camera trickster of the world was the French pioneer, George Melies. One of the earliest tricks he discovered was that of stopping the camera, removing some person or object from the scene, replacing it with another, and continuing the shot which, on the screen, gave the illusion that the first object magically changed into the second.

According to tradition, he discovered this by accident. Filming traffic one day in Paris' Place de l'Opera, his camera jammed. He adjusted the difficulty and continued the scene a few moments later. On the screen he was electrified to see an omnibus—which had been in front of his camera when the jam occurred—suddenly metamorphose into a hearse. And another camera-trick was born—probably the only one to arrive in such a doleful vehicle!

Pessimistic Pioneer

The French film pioneer Auguste Lumiere, who shares with Thomas A. Edison the honor of being the father of 35mm. movies, is said to have replied to an enthusiastic youth who offered to buy his invention in 1895, "Young man, you should be grateful my invention is not for sale; it would undoubtedly ruin you. It may be exploited for a certain time as a scientific curiosity, but apart from that it has no commercial future whatever."

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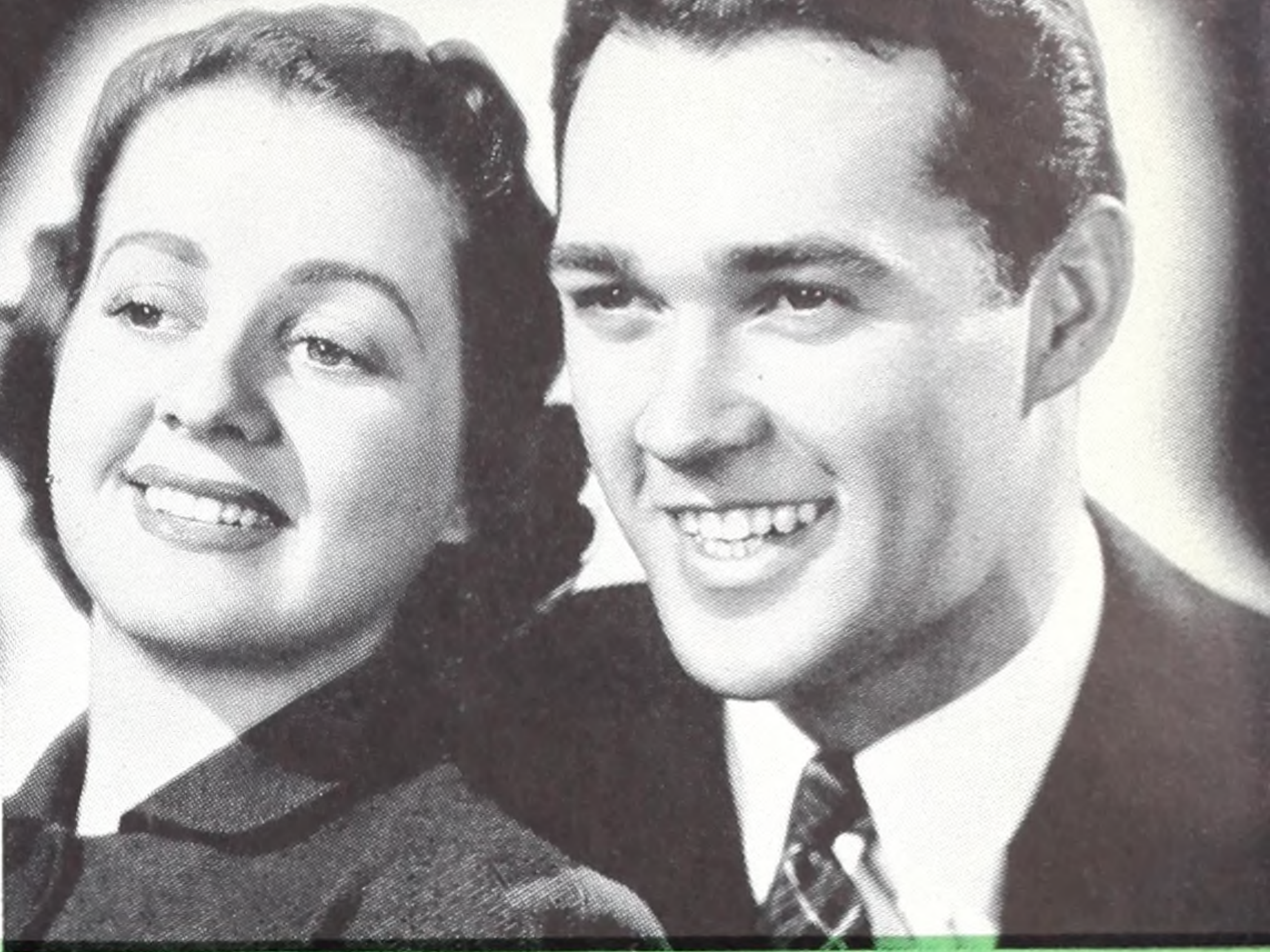

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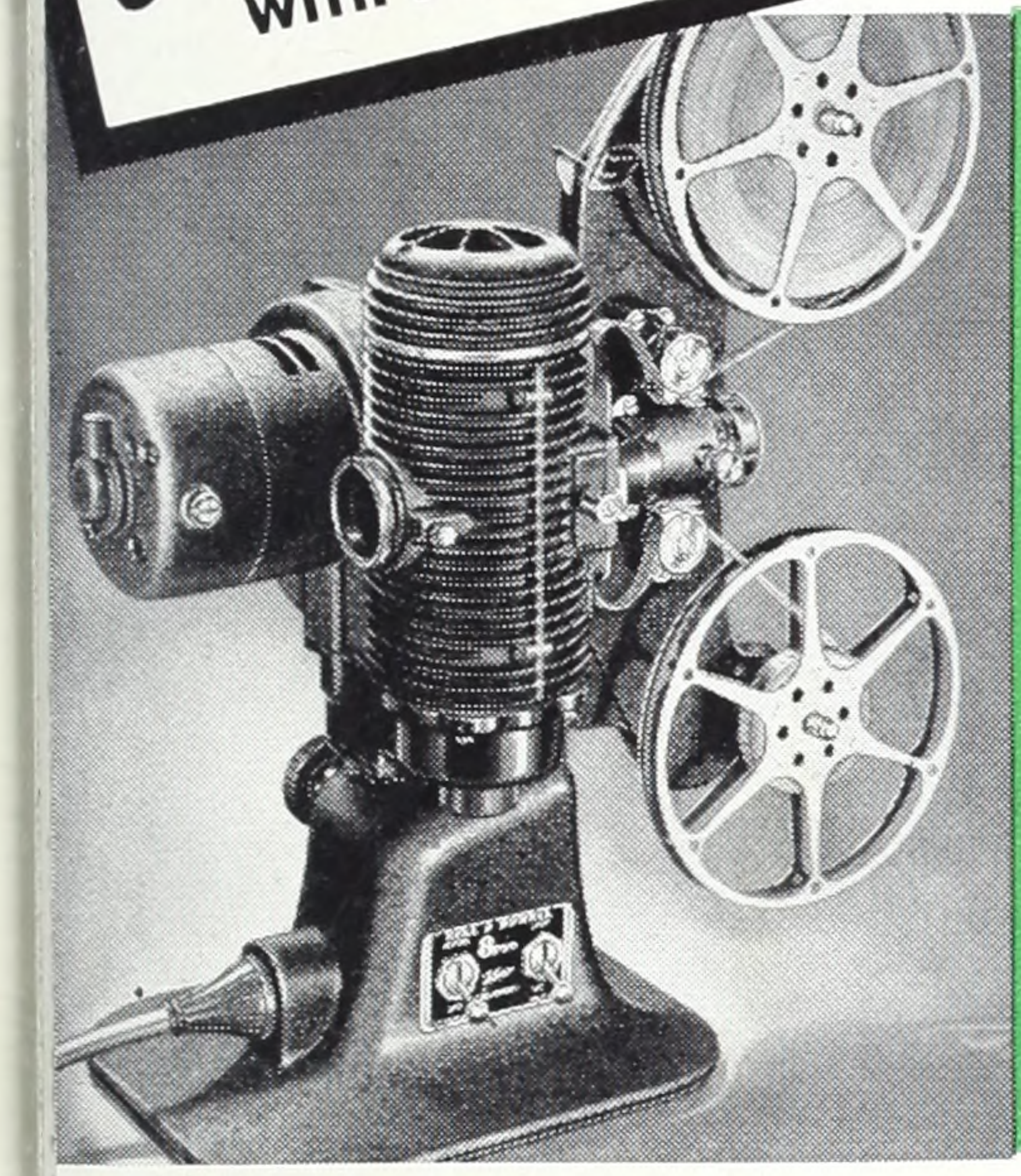

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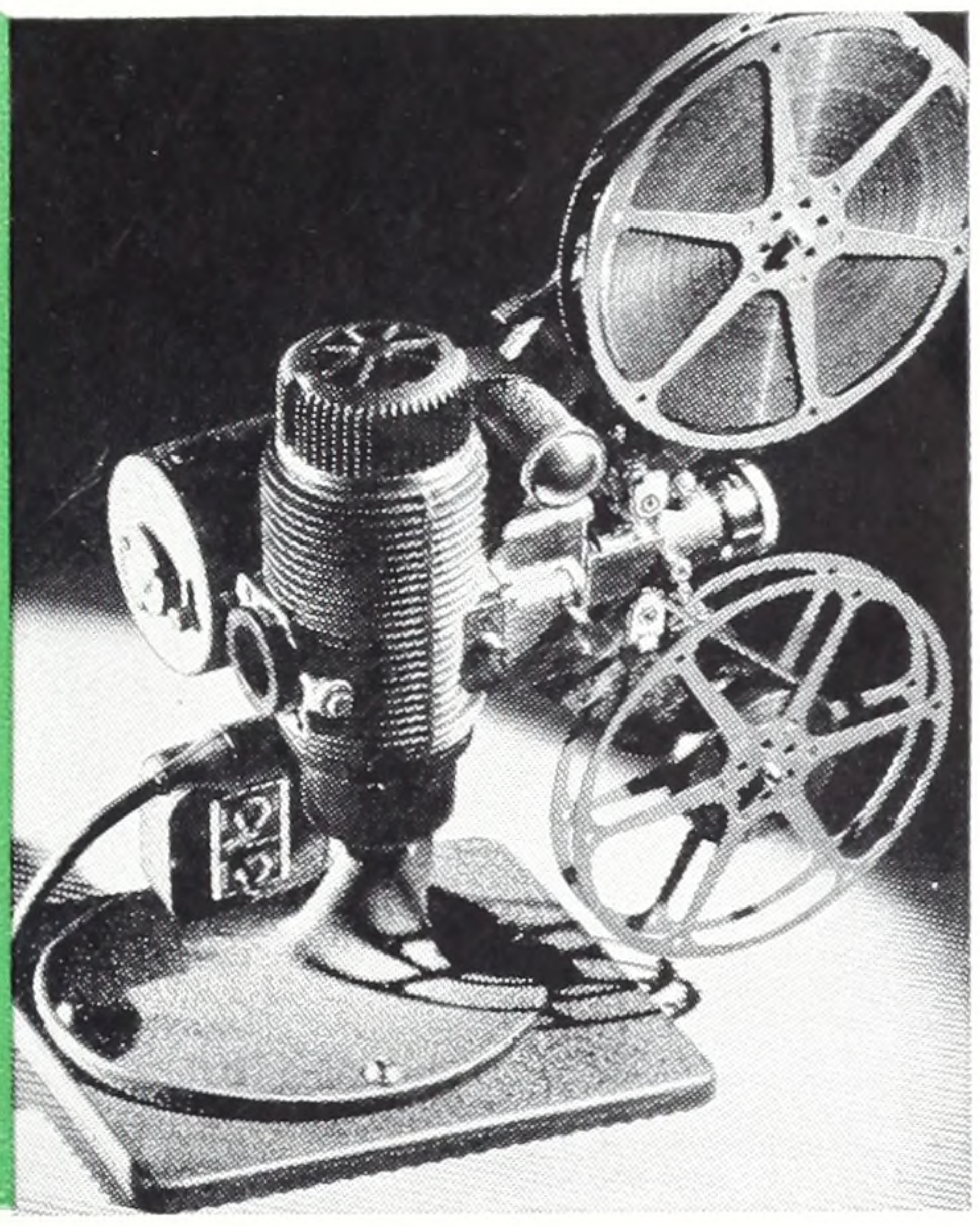

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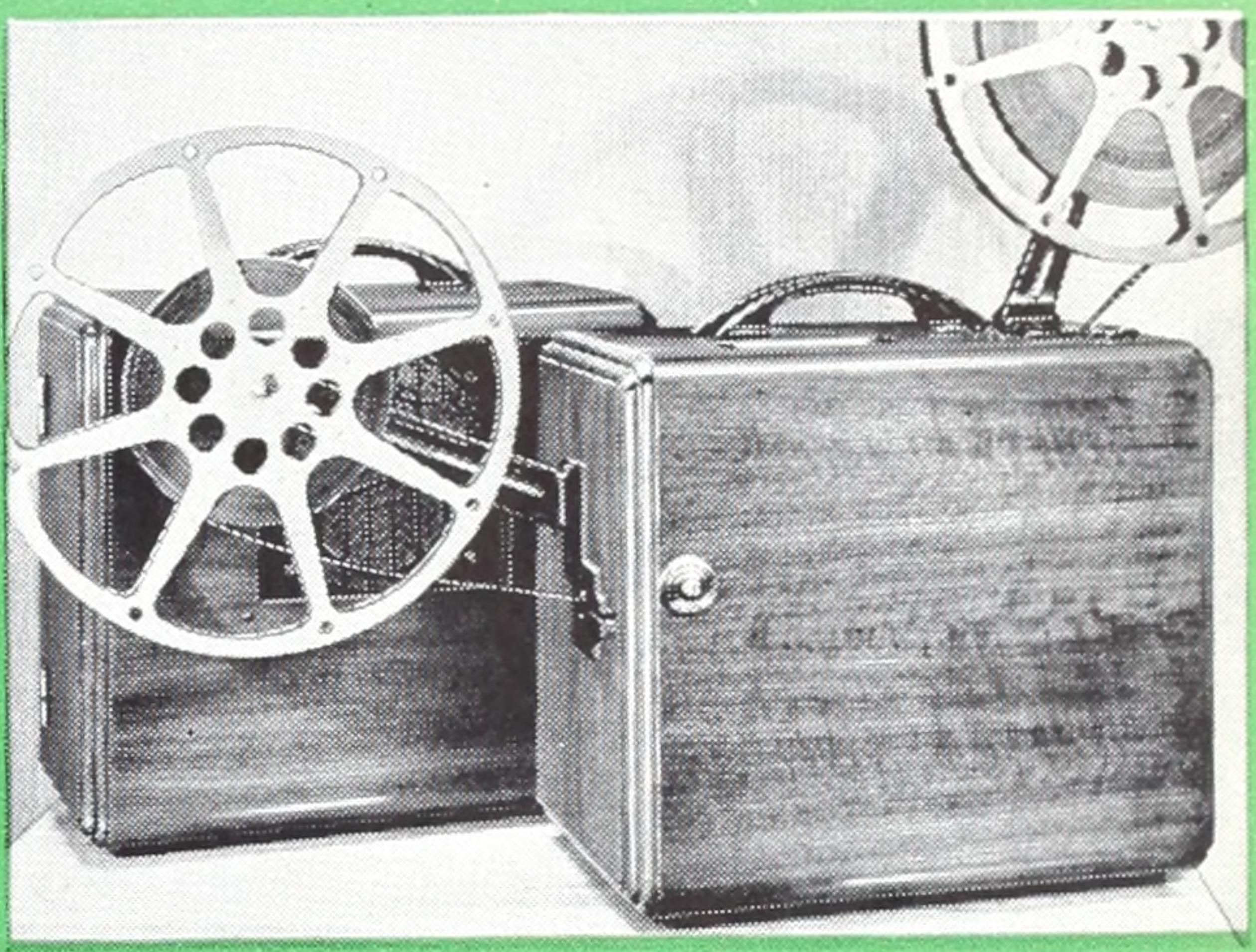

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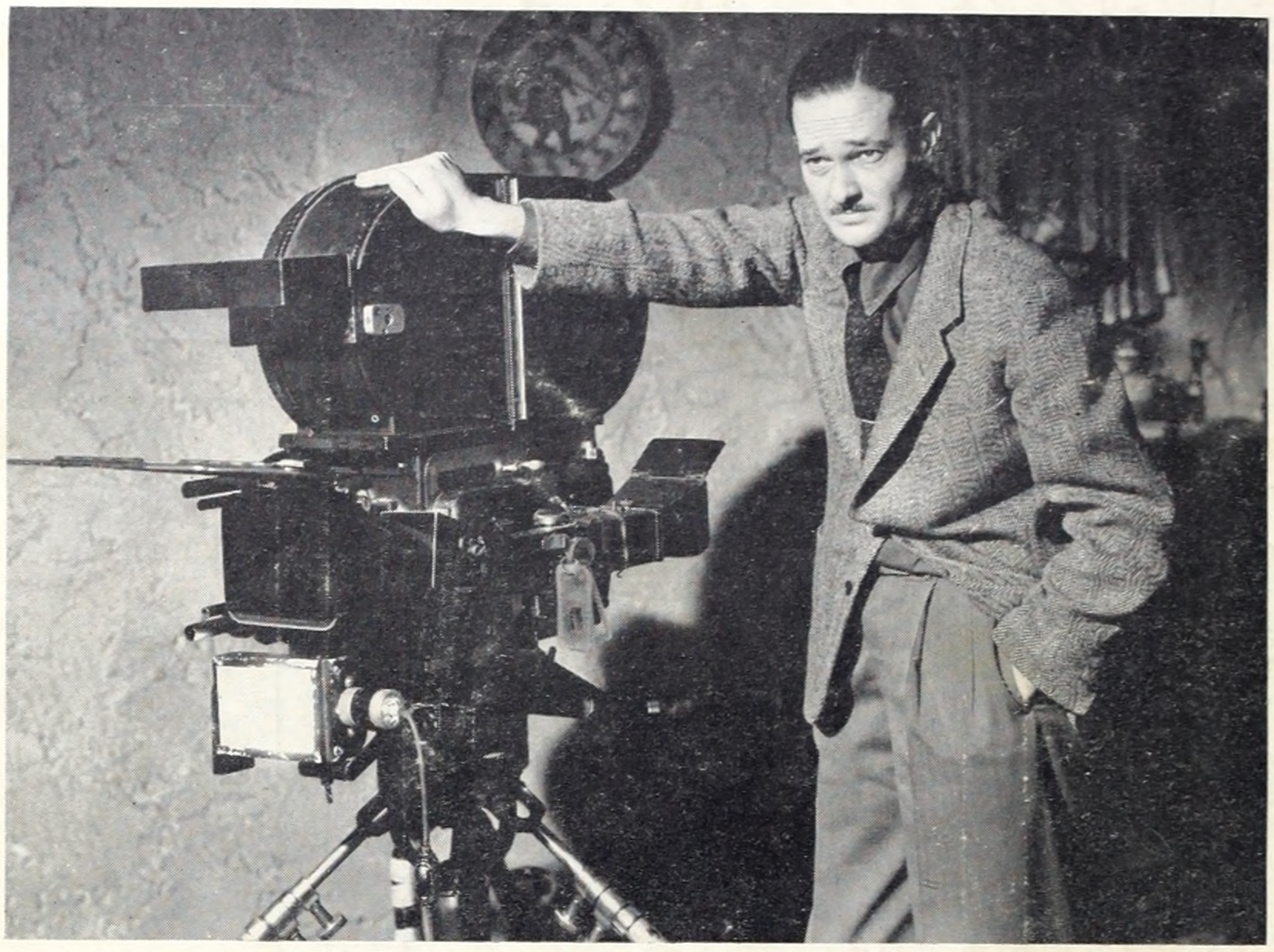

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